

Research Article

INDIVIDUAL AND ECOLOGICAL FACTORS AS PREDICTORS OF HARMFUL DRINKING AMONG FEMALE COLLEGE STUDENTS: AN ECOLOGICAL APPROACH

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Abstract

Objective: Harmful drinking has increased, especially among younger women. To prevent this, we comprehensively understand its related factors. We aimed to examine the ecological factors that affect harmful drinking among Female College Students (FCS) based on the conceptual framework of McLeroy, et al.'s ecological model. **Methods:** The participants were 229 FCS aged 18-29 years from eight universities in South Korea.

Results: We identified factors influencing harmful drinking among the participants using hierarchical logistic regression analysis. Stress relief was the highest among intrapersonal factors associated with harmful drinking (Odds Ratio (OR): 5.380), and those who engaged in social or school activities were more involved in harmful drinking (OR: 4.523). Finally, for college and community factors, the better one's access to exercise facilities (such as gyms), the lower and the level of harmful drinking (OR: 0.411). When only individual factors were considered, the explanatory power was 49.2%; when both individual and interpersonal factors were input, it was 55%, and the explanatory power of the model-including individual, interpersonal, organizational, and regional factors-was 64.2%.

Conclusion: It is important to improve the drinking culture and environment among FCS through continuous monitoring of harmful drinking and university and locality policies. In particular, activities and facilities inside and outside the university should be expanded so that students can maintain healthy social relationships without drinking. Further, psychiatric professionals should develop an intervention program from an integrated perspective.

Keywords: Alcohol Consumption; College Students; Women; Ecosystem; Public Health

Abbreviations: AUDIT: Alcohol Use Disorders Identification Test; KDCA: Korea Disease Control and Prevention Agency; LR: Likelihood Ratio; SGIS: Statistical Geographic Information Service.

Introduction

South Korean society still considers alcohol-related problems to be a predominantly male-centric issue rather than one related to women. However, recently, drinking among women has

increased, especially among younger age groups. In particular, the proportion of high-risk drinking among Female College Students (FCS; 17.2%) is almost two times higher than that among other women in the same age group (9.6%) [1]. If students acquire improper drinking habits during

their college days when they are legally allowed to drink these habits might persist after entering society upon graduation and become normalized within the community [2].

Women have a lower body water content and fewer alcohol metabolizing enzymes than men. Due to changes in their hormone levels during their menstrual cycle, they tend to have a more robust physical response to alcohol than men [3]. Harmful drinking has differing impacts on women than on men [4,5]. Regarding drinking motives, women are more likely to drink to escape negative emotions such as depression or anxiety [4]. Further, women tend to be more intimately affected by the drinking habits of those close to them. Female drinkers are more prone than males to endure emotional trauma, which leads to alcohol consumption [6].

An appropriate ecological model

According to the ecological model suggested by McLeroy, et al. humans continue to evolve and adjust to the environment while interacting with it; thus, as various factors can influence health problems, individual strategies should be prepared for each disease [7]. This ecological approach is primarily implemented in the smoking prevention industry; it emphasizes the influence of local communities' participation and highlights the necessity of maximizing local resources for communities health [8,9]. Likewise, drinking is influenced by the environmental characteristics of the local community's institutions and cultures [10].

Existing ecological model-based research on health problems related to harmful drinking has revealed that personal factors include socio-demographic and psychosocial characteristics [11-13]. Intrapersonal factors include drinking-related traits, alternatives to drinking, and social activities involving parents, family, and friends; institutional and local society factors include school characteristics as well as the social and physical features of the local community [11,14]. Few studies comprehensively approaching the problem of harmful drinking have focused on women. Furthermore, research on drinking has tended to focus on individual changes with

regard to drinking habits. Thus, developing a macro perspective that considers environmental changes is critical.

Study aims and objectives

We aimed to identify the current drinking situation among FCS to facilitate the early detection of harmful drinkers before their symptoms become severe, determine the factors that affect their drinking, and prepare a basis for developing prevention and health promotion programs through pre-emptive interventions. The study objectives involved comprehensively investigating personal and environmental factors affecting harmful drinking among FCS grounded in the ecological model of McLeroy, et al. The specific objectives were:

1. To scrutinize the state of harmful drinking among FCS.
2. To explore the ecological factors affecting harmful drinking among FCS.

Materials and Methods

Study design

Using the ecological model of McLeroy, et al. we comprehensively identified personal and environmental factors affecting harmful drinking among FCS.

Setting

The sample included FCS from eight universities in Seoul, South Korea, who were recruited through convenience sampling. We posted notices to recruit the participants, and an explanation of the study was made available on the universities' official/unofficial homepages. If a female student wished to participate, she was provided a link to an online survey.

Ethical considerations

This study was approved by the Institutional Review Board of Yonsei University (Y-2018-0048) and was conducted in accordance with the 1964 declaration of Helsinki and its later amendments or comparable ethical standards. The participants expressed their intention to

voluntarily take part through the recruitment announcement and received a description of the study. The description explained the study's purpose and potential risks and benefits. They were also informed that participation was voluntary and that they could withdraw at any time.

Participants

The participants were FCS aged 18-29 years who understood the purpose of the research and voluntarily agreed to participate.

Study size

The total number of respondents was 229. To identify the minimum necessary sample size, we used the G-Power 3.1 program. To perform logistic regression analysis, we calculated the odds value of the estimated H_0 value by checking the ratio of harmful drinkers among FCS in previous studies [13,15]. When we calculated input values as $\Pr(Y=1|X=1)$ $H_0=0.45$, $\alpha=0.05$, $\text{power}=0.80$, $\text{odds ratio}=1.55$, the number was 182. Thus, the sample size was appropriate.

Variables and measurement

Harmful drinking: The Alcohol Use Disorders Identification Test (AUDIT) was developed by Babor to detect early harmful drinking and alcohol dependence [16]. To measure harmful drinking, we used the Korean translation of the test: AUDIT-K [17]. It contains 10 questions and is measured on a 5-point Likert scale. A higher total score indicates a greater risk of drinking. We set 8 points as the threshold for harmful drinking, as recommended by the World Health Organization (WHO) and the developer of the AUDIT [7]. In Lee, et al. study, Cronbach's $\alpha=0.92$; the value in this study was 861 [17].

Intrapersonal factors: We gauged drinking motivation using an instrument developed by Shin and Han. The instrument consists of four motivation sub-domains: Enhancement, social, coping, and conformity. Each domain consisted of four items (16 questions total), each measured on a 5-point Likert scale. A higher score indicates a greater related motivation in each domain. Cronbach's α in Shin and Han's study

was 0.76-0.89. In this study, it was 0.879. Cronbach's α for each domain was 0.784, 0.878, 0.902, and 0.790, respectively [18].

The instrument for measuring childhood trauma was initially created by Bernstein and Fink and translated by Yu, et al. who confirmed its validity [19,20]. It contains 28 questions in five sub-categories-emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect-as well as three questions for testing validity. Responses are given on a 5-point scale (1=not at all to 5=definitely yes).

The questionnaire also includes reverse questions (1=definitely yes to 5=not at all). For childhood trauma, Cronbach's α was 0.925. For each sub-category, Cronbach's α was 0.781, 0.812, 0.699, 0.847, and 0.630, respectively. For the validity scale, Cronbach's $\alpha=0.837$.

We measured stress perception levels and ways to reduce them using a question from the 2017 Korean Youth Health Behavior Survey, conducted directly by the Korea Centers for Disease Control and Prevention [21]. Respondents rated stress levels on a 4-point rating scale (1=rarely or none to 4=mostly) to the item, "How much stress do you feel in daily life?" Higher scores imply higher stress levels.

We formulated a question on how to relieve stress. The respondents chose from the following items in response: Do nothing, sleep, sing songs, exercise, eat food, or drink.

Interpersonal factors: To determine family drinking history, we measured respondents' perceptions of their parents' drinking. Specific questions were developed based on the AUDIT. The respondents answered three items about their parents' drinking frequency, the amount consumed in a single drinking session, and the frequency of heavy drinking on a 5-point Likert scale. Higher scores signal deeper levels of parents' harmful drinking (Cronbach's $\alpha=0.758$).

We measured the respondents' social activity levels using a question on regular exercise from the Adolescent Health Behavior Survey. For the present study, we created some questions

regarding intra-mural club activities and extramural social activities. Whether the respondent used college facilities (e.g., performance and cultural facilities, gyms) was also enquired by revising the question formed by Kim, et al. [22].

We also gauged the drinking behavior of the respondents' best friends. We created four questions on friends' drinking habits relating to drinking frequency, amount of alcohol consumed when drinking, the frequency of heavy drinking, and dependent drinking, respectively. Furthermore, the respondents answered questions using a 5-point Likert scale. Higher scores indicate greater harmful drinking levels among one's friends (Cronbach's $\alpha=0.845$).

Institutional and community factors

Institutional factors: a) Variables regarding the general characteristics of each selected university concerned whether it was public or private, and whether it was a girls or a co-educational university. We obtained this information from the relevant university's homepage.

b) Drinking-related characteristics of the selected universities, as perceived by the respondents.

To examine the drinking-related characteristics of the universities, we revised questions from Kim, et al. [22]. We used the mean value of scores of respondents belonging to a certain university as the university value. We measured the degree to which a university was strict or tolerant toward drinking using the item, "What are the rules or practices for alcohol prevention in your current school?" rated on a 7-point scale. (0=none at all to 6=applied very strictly). Higher scores indicate more strictness from the relevant university.

Liquor accessibility refers to the degree to which liquor can be accessed on campus under diverse conditions. The variable consists of six questions, and respondents answered on a 4-point Likert scale. Higher scores signal greater degrees of strictness. Accessibility to in-tramural facilities refers to the extent to which numerous facilities (e.g., performance halls, video and audio facilities, coffee shops, gyms,

Swimming pools, and tennis courts) are accessible to students; the respondents answered on a 4-point Likert scale. Higher scores imply greater degrees of ease.

Community factors

Community characteristics: We obtained data for judging the local community level based on administrative data from homepages for cities/counties/districts and the Statistical Geographic Information Service (SGIS; provided by Statistics Korea) [23]. Specifically, we collected local data on the degree of social instability (including rates of crime, divorce, and suicide); rates of harmful driving, obesity, smoking, and stress perception; the usage rate of facilities meant for cultural activities; and the number of coffee shops, Internet cafes, and bars in the community.

Subjective local environment: To examine the respondents' subjective perceptions of the environment near their campus, we revised the questions used in the 2017 Community Health Survey conducted by the Korea Disease Control and Prevention Agency (KDCA). We measured the items on a 4-point Likert scale; they involved the ease of finding places to drink, exercise facilities, and cultural activities. Higher scores indicate greater degrees of ease.

Statistical Methods

We used the SPSS 23.0 program to analyze the descriptive statistics and factors affecting harmful drinking.

- We employed STATA 13.0 to check the significance between the models in the logistic regression analysis.
- We analysed harmful drinking and ecological factors using descriptive statistics such as frequency and mean.
- We identified ecological factors that influence harmful drinking using hierarchical logistic regression analysis. We identified the models' goodness-of-fit based on the work of Hosmer and

Lemeshow test, and pinpointed the difference in significance between models via the Likelihood Ratio (LR) test.

Results

General characteristics of FCS

Table 1 outlines the respondent’s general characteristics.

Drinking status and harmful drinking among FCS

Table 2 portrays the drinking status and harmful drinking levels among the respondents. Among

the 229 respondents, an overwhelming majority (n=202, 88.2%) drank, while 27 (11.8%) did not.

We administered the AUDIT to 202 students who reported that they engaged in drinking alcohol. The average AUDIT score was 11.49 (SD=7.11; range: 2-36). A total of 69 (34.2%) scored less than 8 points, while 133 (65.8%) scored 8 points or more.

Additional analysis of the total AUDIT score shows that skewness was 0.91 and right-skewed, and kurtosis was 0.30 and leptokurtic. The largest share of respondents had a critical score of 8, and 31 (14.5%) had AUDIT scores that were 20 points or above (indicating possible alcohol dependence).

Table 1: General characteristics of FCS (N=229).

Characteristics	Categories	n (%)	Mean (SD)	Min-max
Age (year)	<22	97 (42.4)	22.12 (1.80)	18-29
	≥ 22	132 (57.6)		
Grade	Freshmen	59 (25.8)		
	Sophomore	53 (23.1)		
	Junior	56 (24.5)		
	Senior	61 (26.6)		
Major	Liberal arts	51 (22.3)		
	Social sciences	63 (27.5)		
	Science/Engineering	47 (20.5)		
	Medical/Public Health	49 (21.4)		
	Arts and physical Education/other	19 (8.3)		
Religious affiliation	Christianity	48 (21.0)		
	Buddhism	8 (3.5)		
	Catholicism	18 (7.9)		
	None	155 (67.7)		
Working part-time	Yes	127 (55.5)		
	No	102 (44.5)		

Table 2: Drinking status and harmful drinking of FCS (N=229).

Characteristic	Category	n (%)	Mean (SD)	Min-Max
Drinking status	Drinker	202 (88.2)		

	Non-drinker	27 (11.8)		
Harmful drinking (AUDIT)	Normal (0-7)	69 (34.2)	11.49 (7.11)	2-36
	Harmful drinker (≥ 8)	133 (65.8)		

Ecological factors influencing harmful drinking

To identify factors that influence harmful drinking among FCS, we established a hierarchical community model by inputting variables

related to interpersonal, intrapersonal, institutional, and the factors; the variables and results are depicted in Table 3. Each of the variables incorporated into this model was significant in the univariate analysis.

Table 3: Logistic regression analysis of ecological factors on harmful drinking (N=202).

		Model 1		Model 2		Model 3	
		OR	95% CI	OR	95% CI	OR	95% CI
Intrapersonal variables	Drinking motive (social)	1.531**	1.274-1.841	1.506**	1.233-1.840	1.522**	1.230-1.883
	Drinking motive (enhance)	1.310**	1.112-1.542	1.323**	1.106-1.581	1.345*	1.102-1.643
	Drinking motive (coping)	0.949	0.844-1.066	0.971	0.856-1.101	1.012	0.876-1.169
	Drinking motive (conform)	0.809*	0.688-0.952	0.785*	0.660-0.934	0.765*	0.631-0.928
	Stress relief method (drinking)	4.672*	1.079-20.232	4.517*	0.975-20.933	5.380*	0.835-34.641
	Childhood trauma (emotional abuse)	1.042	0.911-1.192	1.082	0.924-1.267	1.081	0.906-1.290
	Tolerance for drinking	1.16	0.993-1.356	1.122	0.954~1.321	1.136	0.941-1.371
	First period of drinking (ref: college)	3.273**	1.404-7.629	3.705**	1.463-9.387	4.804**	1.599-14.435
Interpersonal variables	Drinking family history (father)	-	-	1.115	0.992-1.254	1.107	0.964-1.272
	Friends' drinking			1.151*	1.001-1.323	1.17	0.996~1.373
	Drinking alone			0.916	0.352-2.382	0.835	0.276~2.528
	Use of school facilities (performance/cultural activities)			2.584*	1.069-6.245	4.523**	1.585~12.905

	(ref: no.)						
College and community factors	Availability of facilities at the college (performance/cultural facilities)					0.628	0.304-1.301
	Availability of facilities at college (e.g., gyms)					0.411 ^{**}	0.218-0.777
	The number of security facilities					0.559	0.054-5.845
	Drinking rate (%)					0.8	0.526-1.217
	The number of bars					1.003	0.993-1.014
	Drinking commercial exposure for a month					1.48	0.975-2.248
	Ease of accessibility to exercise facilities in the community					0.505	0.000-4.875
Goodness-of-fit of the model	Nagelkerke R ²	0.492		0.55		0.642	
	Hosmer and Lemeshow χ^2 (p)	10.010 (0.264)		9.639 (0.291)		10.423 (0.237)	
Omnibus test of model coefficients	Chi-square (p-value)	88.785 (<0.001)		102.336 (<0.001)		126.014 (<0.001)	
	LR test χ^2 (p)		12.87 (0.0019)		16.03 (0.0136)		
<p>Note: * p<0.05, ** p<0.01, *** p<0.00. ^aStandard error, confidence interval, and p are estimated <i>via</i> the bootstrap method.</p>							

The test of model significance demonstrated $\chi^2=126.014$ ($p<0.001$), which means that it is significant. The goodness-of-fit test, using the work of Hosmer and Lemeshow, revealed that $\chi^2=10.423$, $p=0.237$, which is greater than the significance probability of 0.05. Thus, the model was good. Further, Nagelkerke $i^2=0.642$, meaning the model's explanatory power was 64.2%. As for interpersonal factors, we found that when social drinking motivation rises by 1

point on the Likert scale, the odds of harmful drinking increase by 1.522 times (95% Confidence Interval (CI): 1.230-1.883), and when enhancement drinking motivation goes up by 1 point, the odds increase by 1.345 times (1.102-1.643). Meanwhile, when conformity drinking motivation increases by 1 point, the odds of harmful drinking fall by 0.765 times (0.631-0.928). If one relieves stress with

drinking, the odds increase by 5.380 times (0.835-34/641).

As an intrapersonal factor, the use of performance and cultural facilities increased the odds of harmful drinking by 4.523 times (1.585-12.905). Those with friends who drank tended to be 1.170 times more likely to become harmful drinkers, but this was not statistically significant.

Regarding institutional and community factors, the accessibility of intra-mural gyms decreases the odds of harmful drinking. We found that a 1-point rise in such accessibility reduces the odds of drinking by 0.411 times (0.218-0.777). Further, an increase in one drinking place in the neighbourhood increases the odds of harmful drinking by 1.003 times, and a 1-point increase in the ease of using exercise facilities in the community decreases the odds of harmful drinking by 0.505 times. However, these differences were not statistically significant.

There were some changes in the models' explanatory power. The Nagelkerke R^2 value of Model 1 was 49.2%, and the Nagelkerke R^2 of Model 2-where the intrapersonal factor was added to personal factors-was 55%. The 6% increase in explanatory power from Models 1 to 2 remained significant through the LR test ($\chi^2=12.87$). The Nagelkerke R^2 of Model 3 (and the final model) was 0.642. The explanatory power of Model 3, which included interpersonal, intrapersonal, and institutional and local factors, was 64.2%. This represented a 9% increase from Model 2; the LR test of the increase in explanatory power was also significant ($\chi^2=16.03$, $p=.0136$).

Discussion

Regarding the relationship between drinking motives and harmful drinking, social motivation was effective in raising the probability of harmful drinking. Female students tended to drink as a means of maintaining the closeness of interpersonal ties. According to Cox and Klinger, enhanced motivation has a stronger effect on harmful drinking [24]. According to Suh, et al. FCS are more likely to drink based on a social reason compared to male college students, and

those who drink because of conformity are not likely to become harmful drinkers; this is consistent with our findings.

A study on male college students reported that enhancement motivation, a drinking motive, had the highest predictive power, indicating that motivation prioritization among male college students may differ from that of female students [25]. Moreover, alcohol drinking among female students may serve to boost their sociality. However, it is necessary to educate them to recognize how excessive drinking could lead to harmful drinking and, ultimately, to alcoholic dependence, which could result in social isolation.

Respondents who mentioned drinking as their way to relieve stress had significantly higher scores for harmful drinking than those who preferred other ways of relieving stress. A previous study suggests that stress relief is behind FCS becoming harmful drinkers [26]. Do, et al. reported that two-thirds of FCS start drinking before graduating from high school [27]. According to Kang and Kim, the earlier one starts to drink, the higher the likelihood of becoming a harmful drinker, as indicated by our results [28]. Thus, educational institutions should intervene in high school and educate students about drinking to postpone the onset of their alcohol use.

The interpersonal factor shows that the ratio of harmful drinkers among those who used performance and cultural facilities was higher than among their peers, which contradicts the results of a previous study. However, we considered general cases where students tended to drink after using such facilities and found that their odds of becoming harmful drinkers were 4.52 times higher than those who did not use the facilities. This outcome is consistent with the finding that social motivation is the most significant factor for drinking among FCS. Social gatherings held after performances and cultural events may include drinking, as indicated by the results of another study, which found that students who emphasized on-campus events and were active in social activities were

2.22 times more likely to become harmful drinkers [26].

Furthermore, family drinking history did not have a significant effect on the respondents' harmful drinking. Many other studies besides ours have reported on the impact of family drinking history Suh, et al. however, most of their findings are rooted in a model where only family factors are included [14,29]. The model that we used includes respondents' inner motivations, as well as family factors, and with the increase in personal inner factors, the effect of family drinking history became insignificant. Thus, it is essential to identify the impact of family drinking history by considering diverse variables according to the analytical model.

As for college and community factors, we measured the accessibility of intramural facilities based on respondents' subjective perceptions, and we used the average value of such perceptions as the school value. We found that the odds of harmful drinking among students in universities that scored higher in terms of accessibility to such facilities were 0.411 times lower than that of students in universities that scored lower points for accessibility. This outcome is similar to that of a study dealing with drinking-related damage affected by environmental characteristics, which examined university employees and found that better access to other facilities that were available to members led to lower drinking-related harm [26]. However, future research needs to include both school-related objective environmental attributes and subjective personal variables to determine the causes of harmful drinking and damage from drinking.

We investigated university rules regarding drinking and the possibility of introducing liquor on campus, but they were not related to harmful drinking. Likewise, an educational program on drinking did not impact harmful drinking. These findings could be attributable to the fact that there was little difference in terms of rules on drinking and the possibility of introducing liquor on campus among the universities included in this study. Furthermore, even when there was

such a rule, the rule was not obeyed, and most universities did not provide educational programs on drinking.

As Hoe and Jang suggested, Korean universities must include guidelines on drinking in school regulations to allow students to receive education on the assessment of their drinking problems and behaviors [30]. Moreover, it is necessary to deal with drinking problems by linking them to a course and placing professional medical personnel at the student consultation center to detect those at high risk of becoming harmful drinkers so that they can intervene actively in students' problems through treatment programs [30]. In addition, it is necessary to pursue policies to adopt new physical environments, such as exercise facilities, to gradually replace the current drinking culture.

Many studies have identified that drinking problems are greatly influenced by social situations and cultures where people can easily buy and drink liquor [31-33]. Research on some areas in the US shows that the higher the accessibility to liquor and the greater the density of drinking places, the more problems there are tied to drinking and related, complicated issues such as sex-mediated infections, violent accidents, and car accidents [33]. In this study, while the density of drinking places had some effect on harmful drinking, it was not statistically significant. This result may have been derived because liquor stores do not exist separately in South Korea; people can buy liquor at any store, implying a lack of regulations and policies regarding drinking in the country. Hence, it is necessary to change the environment to lower accessibility to liquor in South Korea by adopting regulations on liquor sales and revising tax policies on liquor.

Our findings verify that the ecological model is appropriate for explaining harmful drinking among FCS. Other studies dealing with health behavior have adopted an ecological model similar to the one used in this study [9,34]. These investigations have commonly pointed out the effects of the organizations and local communities to which people belong and suggest

that maximizing local resources is cost-effective for inducing behavioral changes.

We identified factors and variables affecting harmful drinking among FCS through an ecological approach and proved the necessity of comprehensively considering both personal and environmental factors. Thus, we assert that different factors should be considered when related policies are established or when programs to prevent and intervene in drinking problems are developed. In particular, we propose that gyms, among diverse intramural facilities, should be enlarged, improved and made accessible, and accessibility should be raised to enhance the physical and mental health of FCS.

Conclusion

This study provides a knowledge base for explaining harmful drinking among FCS using an ecological model; that is, we identified environmental elements, such as family and organizations, as well as personal traits. This study offers a basis for developing and operating an intervention program to prevent harmful drinking among FCS. Specifically, the study establishes a foundation for requiring school authorities to strengthen drinking-related education and rules and recommends that universities and local leaders create policies to build alternative facilities, such as exercise facilities, on campuses and in nearby local communities. In particular, many activities and facilities inside and outside of the university should be expanded so that students can maintain healthy social relationships without drinking

Limitations

As this study was cross-sectional, it has limitations in determining causal relations among the variables. Future longitudinal research could determine the relationship between the variables. Furthermore, as we chose universities in Seoul for convenience sampling, we encountered the problem of the representativeness of the population. Thus, a large-scale study utilizing data from all universities across the country should be conducted to identify variances among universities and to allow for multi-level model

and cross-level interaction analyses. Additionally, this study has limitations in determining institutional characteristics; we only depended on the subjective views of each student. Lastly, although the data collection period was 2018, before COVID-19, the results can be compared with the current situation in which the social environment, including university culture, has shifted due to the pandemic.

Declarations

Conflicts of interest

The authors declare no conflicts of interest.

Sources of funding

The study had no external funding.

Author contributions

All authors listed meet the authorship criteria according to the latest guidelines of the International Committee of Medical Journal Editors (ICMJE) and are in agreement with the manuscript. J.P., S.K., and C.P. were responsible for the study's concept and design. J.P. performed data collection. J.P., S.K., and C.P. were responsible for data analysis and interpretation. J.P. wrote the manuscript under the supervision of S.K and C.P. All authors contributed to and approved the final manuscript.

Data availability

The data that support the findings are available from the corresponding author upon reasonable request.

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