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Psychosocial Correlates of Depression and Anxiety Among Undergraduate Health Professional Students in Bhutan: A Cross-Sectional Study

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ABSTRACT
Introduction: In Bhutan, limited research examines family systems, substance use and mental health among nursing and allied health students. This study explored associations between depressive symptoms, parental relationships, self-belief and substance use. **Methods:** A cross-sectional online survey of 289 KGUMSB undergraduate students assessed demographics, family support, mental health symptoms, substance use, and self-belief using structured 10-point Likert-scale measures. **Results:** Feelings of sadness were associated with lower self-belief (p =020). Substance use (alcohol and cannabis) was more prevalent among male students. Parental relationship satisfaction was linked to self-belief (see self-belief results below) but not substance use or mental health symptoms ($p < .001$, $\eta^2_p = .120$). Regression models were not significant, explaining limited variance in outcomes ($p = .078$). **Conclusions:** The findings suggest sadness is associated with lower self-belief. As a cross sectional study, results indicate associations, not causation. Early support for sadness may strengthen mental well-being and resilience among Bhutan's future healthcare professionals.
Keywords: *Adolescents; Bhutan; Mental Health; Substance Use.*

INTRODUCTION

The mental health of healthcare students is a critical determinant of their academic success, clinical competence, and long-term professional sustainability. Evidence from the Bhutanese context indicates that nursing students encounter a multifaceted landscape of stressors. Elevated levels of stress are primarily driven by intense academic workloads (92%), perceived deficiencies in clinical skills (81%), and the emotional burden associated with patient mortality (78%)[2]. This challenge is contextualized within a unique national framework; Bhutan's commitment to a universal free healthcare model is currently strained by chronic human resource shortages and high attrition rates[3,4]. Such systemic pressures impose significant responsibilities on the emerging healthcare workforce, which must ultimately navigate high service expectations and a demanding clinical environment. While global literature establishes a framework for student well-being, there is a lack of Bhutan-specific empirical research on how cultural protective factors, such as family dynamics, interact with mental health and substance use.

Psychological resources like self-belief and self-efficacy are vital for managing these stressors. Self-belief refers to an individual's conviction in their ability to manage prospective situations, while self-efficacy specifically concerns the belief in one's capability to execute tasks to achieve goals[5]. These constructs often overlap to provide a foundation for student resilience. In cohorts of medical and nursing students, higher resilience correlates with lower levels of burnout, anxiety, and depression[5,6]. Social scaffolding, particularly through supportive parental relationships, is hypothesized to enhance these psychological resources, thereby acting as a protective factor against psychological distress and maladaptive coping behaviors like substance misuse[7,8].

Beyond individual characteristics, the social environment provides essential scaffolding for mental health[9]. Perceived social support, particularly from family, represents one of the most potent protective factors against psychological distress across diverse cultures[10]. For university students, emotional support and connectedness with family correlate with lower rates of depression, anxiety, and risk-taking behaviors such as substance misuse[11, 12].

The quality of parent-child relationships serves as a foundational element in the development of students' psychological resilience, particularly through the enhancement of self-belief and self-efficacy. Research indicates that supportive parenting, characterized by warmth, autonomy, support, and emotional availability, is positively correlated with elevated levels of self-efficacy among young adults[13,14]. This self-belief functions as a crucial mediator; students who perceive robust parental support exhibit increased confidence in their capacity to manage stressors, which subsequently mitigates the onset

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and severity of mental health symptoms, including depression and anxiety[15, 16]. Furthermore, youth with higher self-efficacy are less inclined to resort to substance use as a coping strategy, as they possess adaptive stress management skills and view themselves as capable of navigating challenges without reliance on maladaptive behaviors[17, 18]. Conversely, suboptimal parental relationships hinder the development of self-efficacy and are linked to elevated psychological distress and a heightened susceptibility to substance use disorders[19, 20].

The interplay between risk, protective factors, and mental health outcomes is not uniform and is significantly moderated by demographic and contextual variables. Gender disparities in mental health symptoms and substance use are well-documented where in female university and healthcare students consistently report higher levels of perceived stress, anxiety, and depression in compared to their male counterparts[21, 22]. In contrast, male students frequently report elevated rates of hazardous alcohol and substance use, a pattern recognized as a divergent manifestation of distress[23].

While existing literature offers a general framework, its relevance to Bhutanese nursing and allied health students remains unclear due to a lack of research on their mental health, substance use, and cultural protective factors like family. This study therefore aims to describe mental health symptoms and substance use pattern among students at the Khesar Gyalpo University of Medical Sciences of Bhutan (KGUMSB). We also aim to assess the associations between these symptoms, self-belief, and family support. We hypothesize that higher parental relationship satisfaction will be associated with stronger self-belief and lower levels of mental distress.

METHODS

Study design

A multinational, multidisciplinary team conducted a self-reported, cross-sectional online survey targeting youth and young adults (YYA) at the Faculty of Nursing and Public Health (FNPH), KGUMSB as part of a larger mixed-methods research study. This paper presents the findings from the initial quantitative pilot survey. The study design was developed in collaboration with Canadian medical students from the University of British Columbia (UBC) and clinical counseling students from FNPH, KGUMSB, under the supervision of academicians and psychiatrists from Bhutan and Canada.

Study setting

This study was conducted at the FNPH, a constituent faculty of KGUMSB in Thimphu. FNPH is the primary healthcare education institution in Bhutan, offering programs in nursing, public health, and allied health sciences, and was selected as the study site due to its large student population and diverse program offerings, providing the broadest representation of healthcare students. The sample was intended to represent nursing and allied health students enrolled at FNPH rather than all health students in Bhutan. As the country's major health professional training institution, FNPH enrols students from diverse geographical and socio-demographic backgrounds across Bhutan. This study represents Phase 1 of a broader research project planned to expand to multiple institutions in Bhutan to improve national representativeness across different student populations.

Study population

The inclusion criteria for the survey included YYA between the ages of 18 and 25, who were currently enrolled and attending post-secondary education at the FNPH. Participants were also required to be Bhutanese citizens.

YYA who were unable to provide informed consent due to insufficient mental capacity, and FNPH counseling students who were directly involved in coordinating the study in Bhutan were excluded.

Sample size

The target sample size was determined using Taro Yamane's formula for finite populations where the margin of error was set at 5%. Based on the total FNPH student population at the time of the study, the calculated sample size was 312 students. The survey was distributed to 292 students, with 233 ultimately completing the survey.

Survey instrument

A purpose-designed questionnaire was developed for this study following an extensive review of existing literature, previously validated instruments, and international frameworks related to mental health symptoms, self-belief, parental relationships, and substance use among young adults and student populations. The questionnaire items were adapted and contextualized to ensure cultural and contextual relevance to Bhutanese nursing and allied health students while maintaining alignment with the study objectives and conceptual framework.

The draft instrument underwent expert review by professionals with backgrounds in mental health, public health, behavioral science, and academic research to assess item relevance, clarity, representativeness, and cultural appropriateness. Content validity procedures were conducted during this stage, including assessment of the Content Validity Index at the item and scale levels to determine the adequacy of the questionnaire in measuring the intended constructs. Revisions were made based on expert feedback.

Pilot testing was subsequently conducted among a small group of students to evaluate comprehensibility, language clarity, item sequencing, and feasibility of administration. Internal

consistency reliability was further examined post hoc using Cronbach's alpha coefficients. The scales demonstrated good-to-acceptable reliability for Self-Belief (α = 0.864), Mental Health Symptoms (α = 0.811), and Parental Relationship (α = 0.778). The Substance Use items (alcohol, cannabis, opioids; α = 0.350) yielded a lower alpha coefficient, which was expected given that these items represented distinct substance use behaviors rather than a single underlying construct. Therefore, substance use variables were analyzed independently rather than as a composite scale.

Demographic data encompassed participant age, gender, sexual orientation, occupation, highest level of education attained, district of origin, marital status, number of children, family income, mental health diagnoses, and family history of mental health issues. Additionally, participants were questioned on five major themes relating to perspectives and influences of mental wellbeing: Mental health (anxiety, low mood, depression, suicide, social media, stigma, and substance use) where mental health symptoms refer to emotional, cognitive, behavioral, and psychological disturbances that may affect an individual's thoughts, feelings, mood, functioning, and daily activities. Symptoms can include sadness, anxiety, stress, hopelessness, irritability, sleep disturbances, emotional dysregulation, and difficulties in coping or social functioning, which may or may not meet the diagnostic threshold for a mental disorder[24]; Gender-based violence (sexual assault/harassment, physical assault, and safety); Family dynamics (adverse childhood events, relationship with parents); Resilience (ability to manage difficult times, social supports), and COVID-19 pandemic (mood changes, domestic violence, and effects on sleep, diet, and daily activities).

This paper focuses solely on reporting and commenting on the themes of mental health, resilience and family dynamics within the larger survey.

The survey utilized a 10-point Likert scale (0–10 with 0 representing strong disagreement and 10 representing strong agreement). This format was selected based on psychometric literature suggesting that higher-point scales can improve measurement quality, provide greater response sensitivity and reduce ceiling effects in university populations, allowing for more granular analysis of psychological constructs[25].

The survey also included three short answer questions enquiring about family effect on mental wellbeing, personal experiences of mental health and resources.

Recruitment and Dissemination

The survey was distributed through formal institutional channels at FNPH and KGUMSB. Following administrative approval, department deans communicated the survey to faculty members and class coordinators, who subsequently informed eligible students of its purpose, voluntary nature, and administration schedule. To restrict participation to the intended sample and ensure standardised administration, the survey was conducted in designated KGUMSB computer laboratories during supervised sessions from November 2021 to April 2022. Participants accessed the Qualtrics platform collectively, provided electronic informed consent prior to commencing, and completed the anonymous questionnaire in approximately 20 minutes. This controlled approach ensured that data were collected exclusively from the target population, precluding unrestricted public access to the survey platform.

Data Management and Analysis

Survey responses were collected electronically using the UBC Qualtrics survey tool; data remained encrypted and are securely stored and backed up in Canada. All analyses were conducted on de-identified data using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA), accessed through an institutional license at the KGUMSB.

Descriptive statistics were computed for all demographic and survey variables, including frequencies and percentages for categorical variables, and means with standard deviations (SD) for continuous variables with normal distribution. Mean scores and standard deviations were calculated for individual items, and composite averages were computed for construct-level scores.

To examine associations between parental relationship satisfaction and the full set of dependent variables, a one-way multivariate analysis of variance (MANOVA) was conducted. Multivariate test statistics are reported using Wilks' Lambda and Pillai's Trace. Where the multivariate test was significant, univariate follow-up ANOVAs were conducted for each dependent variable. Effect sizes for univariate tests were calculated using partial eta squared (η^2_p), interpreted according to conventional benchmarks (small ≥ 0.01, medium ≥ 0.06, large ≥ 0.14).

Two separate hierarchical multiple regression analyses were conducted to examine predictors of self-belief. For both regressions, model fit was evaluated using R^2, ΔR^2, and F-statistics, and individual predictor coefficients were examined for direction and significance. A significance threshold of $p < 0.05$ was applied across all inferential tests.

Ethical Considerations

Ethics approval was obtained from UBC and Bhutan's Research Ethics Board of Health (REBH/Approval/2021/095), including all renewals and amendments. Participants were provided mental health and domestic violence helpline resources at survey completion. The research team was guided by principles of mutual reciprocity, cultural safety, and social accountability, given the inherent power dynamics in multinational research involving low- to middle-income countries (LMICs).

RESULTS

Population Demographics

Of 292 survey initiators, 289 provided usable responses (exceeding the target of 233). Females (56.75) outnumbered males and the mean age of participants was 20.6 ±1.49 years. Respondents represented 19 districts, with Trashigang being the most common origin (17.3%). Over two-thirds reported an annual family income of Nu 50,000–99,999.

Description of Mental Health Symptoms

On average, respondents reported low-to-neutral frequency of sadness and anxiety, with females scoring higher than males on both measures (Table 1). Frequency of depression was reported at lower levels than sadness or anxiety across both genders, suggesting that respondents distinguished between these emotional experiences.

Respondents consistently rated the frequency of sadness, anxiety and depression in others as lower than their own self-reported levels, suggesting a tendency toward underestimation of peer distress. Thoughts of self-harm and suicide were reported at low frequency for both self and others (Table 1).

Description of Substance Use

Substance use was generally infrequent across the sample, with the majority of respondents – particularly females – reporting that they had never used alcohol, cannabis, opioids, cigarettes or betel nut, or used them less than once per week (Table 1). The perceived negative personal impact of substance use was low for both genders. Respondents were broadly neutral on whether addiction constitutes a brain disease rather than a moral weakness, with males showing slightly higher agreement than females. No statistically significant association was found between mental health symptom frequency (sadness, anxiety or depression) and substance use, indicating that these constructs operated independently in this sample.

Association of Mental Health Symptoms with Self-belief, Substance Use and Perceived Parental Relationship

Table 2 displays the list of the survey items used to test key constructs of parental relationship, mental health, substance use and self-belief.

Predictors of Parental Relationship Satisfaction

MANOVA revealed a significant multivariate effect of parental relationship satisfaction (Wilks' $\lambda = 0.669$, $F (80, 1676.63) = 1.371$, $p = 0.018$, $\eta^2_p = 0.049$) (Table 3). Univariate follow-up tests showed that this effect was driven by a significant association with self-belief ($p < 0.001$), representing a medium effect size ($\eta^2_p = 0.120$). No significant associations were found with mental health symptoms or substance use variables.

Mental Health, Substance Use and Self-Belief

Hierarchical regression was used to explore how self-belief related to other factors (Table 4). In Model 1, sadness was a significant predictor ($p = 0.020$). However, Model 2—which included substance use—was not statistically significant ($p = 0.078$). Notably, the R^2 value for this model was very low (0.035), indicating that the included variables account for only 3.5% of the variance in self-belief. This highlights the limited predictive power of the current model.

Gender, Mental Health, and Substance Use

ANOVA and hierarchical regression were conducted to examine whether gender predicted mental health symptoms and substance

Table 1: Follow-up Univariate Tests for Parental Relationship Satisfaction

Dependent Variable		df	F	p	η^2_p
Mental Health	Sadness	(10, 270)	0.562	0.844	0.020
	Depression	(10, 270)	1.022	0.425	0.036
	Anxiety	(10, 270)	1.334	0.212	0.047
	Suicide Ideation	(10, 270)	0.779	0.649	0.028
Substance Use	Alcohol Use	(10, 270)	1.833	0.055	0.064
	THC Use	(10, 270)	0.847	0.583	0.030
	Opioid Use	(10, 270)	0.624	0.793	0.023
Psychological	Self-Belief	(10, 270)	3.698	< 0.001***	0.120

Note. Dependent Variable: I am satisfied with my relationship with my parents.
The overall model was not significant, F(7, 273) = 1.11, p = .36.

Table 2: Survey Items used in analysis

Mental Health Symptoms	How often do you feel sad?
	How often do you feel depressed?
	How often do you feel anxious?
	How often do you have thoughts of sui cide?
Substance Use	How often do you drink alcohol?
	How often do you use cannabis?
	How often do you use opioids?
Relationship Satisfaction	I am satisfied with my relationship with my parents
Self-Belief	My belief in myself helps me get through hard times.

use (Table 5). Mental health variables (sadness, depression, anxiety) alone were weak predictors. However, adding substance use significantly improved the model ($p < 0.001$). Alcohol and cannabis use emerged as significant negative predictors, indicating a stronger association with males. Additionally, frequency of feeling sad significantly predicted gender ($p < 0.05$), while frequency of feeling depressed was not significant ($p = 0.416$) in the final model.

DISCUSSION

Parental relationship satisfaction demonstrated a statistically significant overall effect in the MANOVA ($p = 0.018$), indicating associations with differences across the combined dependent variables. Univariate follow-up analyses revealed that this multivariate effect was primarily attributable to self-belief ($p < 0.001$, $\eta^2_p = 0.120$), which exhibited a medium-sized association with parental relationship satisfaction. It is important to note that the significant MANOVA result does not indicate a broad impact of parental relationship satisfaction across all dependent

Table 3: Multivariate Analysis of Variance for Parental Relationship Satisfaction.

Effect	Statistic	Value	df_1	df_2	F	p	η^2_p
I am satisfied with my relationship with my parents	Wilks' Lambda	0.669	80	1676.63	1.371	0.018	0.049
	Pillai's Trace	0.380	80	2160.00	1.347	0.023	0.048

Note. Design: Intercept + Parental Relationship.

Table 4: Hierarchical Regression Predicting Mental Health and Substance Use Variables based on Self Belief amongst undergraduate NAH students.

Predictor	Model 1		Model 2	
	B	β	B	β
Constant	7.34**		7.26**	
How often do you feel sad?	-0.65*	-0.14	-0.82*	-0.17
How often do you use cannabis?			1.53*	0.12
How often do you drink alcohol?			0.19	0.02
How often do you feel anxious?			0.14	0.04
How often do you have thoughts of suicide?			-0.23	-0.02

Note. *Dependent Variable: My belief in myself helps me get through hard times.*
Model 1 Predictor: How often do you feel sad?: $R = .138$, $R^2 = .019$, $F(1, 279) = 5.44$, $p = .020$.
Model 2 Predictors: Model 1 predictors plus How often do you drink alcohol?, How often do you use cannabis?, How often do you have thoughts of suicide?, How often do you feel anxious?: $R = .188$, $R^2 = .035$, $\Delta R^2 = .016$, $F(5, 275) = 2.01$, $p = .078$.
**p < .05. **p < .001.*

Table 5: Hierarchical Regression Predicting Mental Health, and Substance Use Variables based on Gender amongst undergraduate NAH students.

Predictor	Model 1		Model 2	
	B	β	B	β
Constant	1.37***	<0.001	1.88***	<0.001
How often do you feel sad?	0.034	0.113	0.045*	0.031
How often do you feel depressed?	-0.022	0.252	-0.015	0.416
How often do you feel anxious?	0.028	0.122	0.021	0.230
How often do you drink alcohol?			-0.214***	<0.001
How often do you use cannabis?			-0.257**	0.009
How often do you use opioids?			0.034	0.812

Note. Dependent Variable: Gender.

Model 1 Predictors: How often do you feel anxious?, How often do you feel depressed?, How often do you feel sad?: F(3, 277) = 3.86, p = .010.

Model 2 Predictors: Model 1 predictors plus How often do you use cannabis?, How often do you use opioids?, How often do you drink alcohol? : F(6, 274) = 7.77, p < .001.

*p < .05. **p < .01. ***p < .001.

variables. The univariate follow-up tests confirm that none of the mental health symptom variables (sadness, depression, anxiety, or suicide ideation) nor any substance use variable reached significance. The multivariate effect is driven entirely by the association with self-belief. This specificity is theoretically meaningful as parental support appears to operate primarily through the psychological mechanism of self-belief rather than exerting a direct effect on emotional symptoms or substance use behaviours in this population.

Among mental health symptoms examined, frequency of sadness was associated with reduced self-belief in the initial model. This association attenuated when substance use and additional variables were included in the adjusted model (p = 0.078), suggesting that self-belief is likely shaped by complex, multifactorial influences rather than emotional symptoms alone. The low R^2 values across models (Model 1: $R^2 = 0.019$; Model 2: $R^2 = .035$) should be noted as indicating limited overall explanatory power.

Substance use patterns aligned with global trends, with male students showing higher rates of alcohol and cannabis use compared to females.

Notably, the frequency of sadness, alcohol consumption, and cannabis use emerged as statistically significant factors differentiating genders. While "feeling depressed" was not a significant differentiator in the final model, "feeling sad" was. This distinction may reflect differences in how genders report or experience specific emotional states versus clinical terminology. Males may exhibit distinct coping mechanisms, such as substance use, which is supported by the strong association between male gender and alcohol/cannabis use in this study. The divergence between "sadness" and "depression" as distinct predictors merits particular attention within the Bhutanese cultural context. In Bhutan, as in many Buddhist-influenced societies, emotional suffering is often understood through a moral and spiritual lens rather than a biomedical one. The concept of *sem nyam*-loosely translated as "unwell mind" or mental unease-is commonly used in everyday Dzongkha discourse to describe distress that may encompass sadness, anxiety, and grief without mapping neatly onto clinical categories such as major depressive disorder. It is plausible that respondents differentiated "sadness" and "depression" not on the basis of severity, but on the basis of perceived normalcy and social acceptability: sadness may be viewed as a natural emotional experience, while depression carries the stigma of mental illness that is documented in the Bhutanese context. This framing is consistent with findings from other LMIC settings where lay emotional vocabulary diverges meaningfully from Diagnostic and Statistics Manual (DSM) or International Classification of Diseases (ICD) diagnostic constructs. Future qualitative research should explore how Bhutanese students conceptualise and distinguish between these terms, as this has direct implications for the design of mental health screening tools and culturally appropriate support programmes in Bhutan.

Contrary to initial hypotheses, substance use variables-including alcohol, cannabis (THC), and opioids-showed no significant associations with parental relationship satisfaction, though alcohol use approached marginal significance ($p = 0.055$). Similarly, mental health symptoms (sadness, depression, anxiety, and suicide ideation) were not significantly related to parental relationship satisfaction in this sample. These findings challenge the colloquial assumption that substance use and mental health difficulties are always directly tied to parental relationship quality. Instead, the results suggest that parental relationship satisfaction may be more strongly linked to psychological factors such as self-belief than to behavioral outcomes like substance use or emotional distress in this population.

An unanticipated observation was the positive coefficient for cannabis use regarding self-belief in the regression analysis. Despite cannabis use returning a significant individual coefficient ($p < 0.05$), the relationship between cannabis use and higher self-belief cannot be interpreted as a meaningful relationship and may be a statistical artifact. While the overall model was not significant, this trend contrasts with conventional assumptions. It is possible that in this specific demographic, cannabis is used as a means of self-medication that temporarily masks distress or alters self-perception. Critically, when an overall regression model does not reach statistical significance (as is the case for Model 2, $F (5, 275) = 2.01$, $p = 0.078$), the individual coefficients within that model-including the positive cannabis coefficient-cannot be reliably interpreted in isolation. The low explanatory power (R^2) of the regression models suggests that self-belief is likely shaped by unmeasured contextual factors-such as academic workload, peer influence, and economic security-which were not captured by the current instrument.

Limitations

Several limitations should be considered when interpreting this study, organized across three domains. Methodologically, the cross-sectional design precludes causal inference, and convenience sampling at a single institution limits the generalizability of findings to the broader Bhutanese health student population. The reliance on self-reported data may introduce recall and social desirability biases, particularly on sensitive topics such as mental health and substance use. In terms of measurement, the survey instrument was not validated prior to data collection, and standard mental health constructs may not carry equivalent cultural meaning for Bhutanese students; the validity of these constructs within a Buddhist-influenced cultural context warrants further investigation. Analytically, the low R^2 values in the regression models indicate that the measured variables account for only a small proportion of the variance in outcomes, and unmeasured confounders-including academic stress, peer influence, and socioeconomic factors-are likely important determinants that were not captured.

CONCLUSIONS

This exploratory study found that parental relationship satisfaction was the strongest psychosocial correlate of self-belief among nursing and allied health students at FNPH, KGUMSB, though the modest explanatory power of the models warrants cautious interpretation. Feelings of sadness — rather than clinical depression — were inversely associated with self-belief, highlighting the importance of recognizing subclinical emotional distress in this population. Substance use was more prevalent among male students but showed no significant association with parental relationship satisfaction, suggesting that family relationship quality influences student outcomes primarily through psychological mechanisms. These findings underscore the need for gender-sensitive, multifactorial approaches to mental health promotion among health professional students in Bhutan, with particular emphasis on strengthening family support systems and early identification of emotional distress. Future research should employ longitudinal designs to clarify the directionality of these associations and explore broader contextual determinants of student wellbeing.

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AUTHORS CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

SCN: Concept, Study design, data collection, analysis, write up, literature review, manuscript revision

CC: Analysis, write up, literature review, manuscript revision

KT: Concept, Study design, write up, literature review, analysis, manuscript revision

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Authors agree to be accountable for all respects of the work in ensuring that questions related to the accuracy and integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

None

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