

Educational Stress and Quality of Life among High School Students in Cambodia

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ABSTRACT

Background

High levels of academic pressure have been shown to adversely affect students' mental health and overall well-being. However, evidence regarding the relationship between educational stress and quality of life (QoL) among high school students in Cambodia remains limited. This issue has become increasingly important as the country's education system continues to evolve in response to rapid socioeconomic changes.

Objective

To describe the status of quality of life among high school students and its association with educational stress in Cambodia.

Method

A cross-sectional study was conducted with 1192 high school students from four provinces using multistage random sampling. Face-to-face interviews with structured questionnaires were performed to collect the study data. A generalized linear mixed model was applied to identify associations between study factors and quality of life while controlling covariates.

Result

The average quality of life score was 77.02 (± 14.31) with 21.56% reporting poor (95% CI: 19.31-23.9), 59.56% moderate (95% CI: 56.75-62.32), and 18.88% good quality of life (95% CI: 16.75 -21.20). Low to moderate educational stress significantly increased the likelihood of good quality of life (AOR=1.95, 95% CI: 1.26-3.02). Additionally, high quality of life was associated with being in grade 12 (AOR=2.87, 95%CI: 1.92-4.30), and having normal/mild depression (AOR=1.71, 95%CI: 1.14-2.58).

Conclusion

Fewer than one-fifth of students reported good quality of life. Educational stress emerged as a strong quality of life determinant, with study level and depression showing significant associations. These findings highlight the need for comprehensive school-based interventions including stress management programs and mental health screening to address factors affecting adolescent well-being.

KEY WORDS

Educational stress, High school students, Quality of life

INTRODUCTION

Quality of life (QoL) is a complex and subjective concept that considers an individual's goals, aspirations, expectations, standards, and concerns, assessing their diverse needs and the attention they require.¹ It reflects how people perceive their position in life within the context of cultural and value systems they inhabit.² QoL is linked to academic performance and school outcomes, and can be influenced by psychological needs, mental health, social relationships, and lifestyle habits.³⁻⁶

High school students are typically in the adolescent stage, a critical developmental phase for acquiring coping skills to manage negative events from peers, schools, families, and individual psychological and physical changes. These factors increase the risk of behavioral and emotional problems.^{7,8} Educational stress represents one of the most prevalent mental health concerns among adolescents, often resulting from anticipated academic frustrations or educational processes that negatively impact QoL.^{5,9}

In Cambodia, the educational system, particularly at the secondary level, faces increasing public scrutiny. Parents have heightened expectations of educational institutions, while employers express concerns regarding students' adequate preparation for 21st century challenges and the demands of Industry 4.0. These escalating expectations may exert additional pressure on high school students, potentially compromising their mental health and quality of life.¹⁰ However, limited research has examined the specific relationships between educational stress, mental health, and QoL among high school students in Cambodia.

Therefore, this study aimed to address this knowledge gap by assessing levels of educational stress and QoL among Cambodian high school students and examining the association between educational stress and QoL in this population. The findings may inform evidence-based interventions for educators, policymakers, and mental health professionals seeking to optimize student outcomes and well-being within the Cambodian educational context.

METHODS

Cambodia consists of four distinct geographical regions: the plains region (Phnom Penh, Kandal, Kampong Cham, Tboung Khmum, Svay Rieng, Prey Veng, and Takéo), the Tonle Sap region (Kampong Thom, Siem Reap, Battambang, Pursat, Kampong Chhnang, Banteay Meanchey, Oddar Meanchey, and Pailin), the coastal region (Preah Sihanouk, Kampot, Koh Kong, and Kep), and the plateaus and mountains region (Kampong Speu, Stung Treng, Ratanakiri, Mondulakiri, Kratié, and Preah Vihear).

A cross-sectional analytical study was conducted among high school students from one province in each geographical region of Cambodia during the second semester of the 2023-2024 academic year (May to July 2024). The inclusion

criteria were: (1) students enrolled in grades 10, 11, and 12 in public high schools within the selected provinces; and (2) students who provided informed consent (parental consent was obtained for participants under 18 years of age). Students attending vocational schools, technical colleges, and informal education sectors were excluded from the study.

The total sample size for the study was 1,192, estimated using a multiple logistic regression formula based on a previous study.^{5,11} The formula incorporated the following parameters: a proportion (P) of 0.64, derived from $P_0 = 0.59$ (low quality of life among high general well-being) and $P_1 = 0.87$ (low quality of life among low general well-being), with a population proportion $B = 0.16$. The critical values used were $Z_{1-\alpha/2} = 1.96$ and $Z_{1-\beta} = 0.84$.

A multistage random sampling technique was employed to ensure the sample was representative of the broader population of high school students in Cambodia. Firstly, one province from each geographical region was randomly selected. Subsequently, two high schools were randomly chosen from each selected province. Within these schools, students in grades 10-12 were selected proportionally by grade and gender using systematic random sampling to achieve the required sample size.

Face to face interview was conducted using the structured questionnaire which consisted of eight parts: 1) Sociodemographic; 2) Parents and family factors; 3) Study environment; 4) Peer relationship; 5) Mental health; 6) Physical and behavior health; 7) Educational stress of high school students; 8) Quality of life assessment. The WHOQOL-BREF was used to identify the quality of life of high school students.¹² It has 26 items with 4 domains namely physical, psychological, social relationships, and environment domain. After summarizing the scores, they were further divided into 3 groups: good level (96-130 scores), fair level (61-95 scores), and poor level (26-60 scores). Educational stress was assessed using Educational Stress Scale for Adolescents (ESSA).¹³ Further mental health challenges were examined with depression and stress components of Depression Anxiety Stress Scales-21 (DASS-21).¹⁴ The requestions were pretested and check for the content validity and reliability. Cronbach's alpha value for QoL, ESSA, and DASS-21 are 0.94, 0.91 and 0.89 respectively.

The data were analyzed using Stata software, Stata Corp, College Station, Texas 77845 USA, version 18, with the serial number 301809334109, licensed to Khon Kaen University. Descriptive statistics were conducted, appropriately detailing each variable type with frequency counts, percentages, means, standard deviations, medians, and ranges (minimum to maximum). Bivariate analysis was employed to calculate the crude odds ratio (COR). Then, multivariable analysis using a multilevel mixed-effects logistic regression model was employed to account for the nested effects of individuals (level 1) within the four regions

of Cambodia (level 2). Factors with p-value less than 0.25 were forwarded into the initial model of multivariable analysis.¹⁵ The association between the study factors and QoL was considered statistically significant at the p-value of less than 0.05.

This study received approval from “Center for Ethics in Human Research, Khon Kaen University” with the reference number “HE672049” based on the “Belmont Report and GCP in Social and Behavioral Research”. The informed consent was taken before every interview. The participants have full right to withdraw at any time throughout the study period. This study was ensured not to expose any identifiable link to the participants.

RESULTS

Baseline characteristics of the participants

This study included 1,192 middle to late adolescents aged 15 to 20 years, with a mean age of 17.38 years (± 1.19). The majority of participants were aged 16-17 years (45.55%) and 18-19 years (42.28%). More than half of the respondents were female (55.20%). The median monthly family income was 317.07 USD, ranging from 73.17 to 1,585.36 USD, with the majority (54.28%) earning between 200-500 USD per month.

Regarding parental education, most fathers had completed vocational/technical training (29.11%), followed by high school education (23.74%), while the majority of mothers had completed high school (33.47%) or secondary school (23.99%). A large proportion of fathers were either self-employed or business owners (33.56%), followed by government employees (28.86%). Similarly, most mothers were involved in self-employment or business activities (50.84%).

In terms of academic support and lifestyle factors, 16.36% of students attended tutoring classes during weekends or holidays, and 87.25% participated in extracurricular activities. The prevalence of smoking (2.18%) and alcohol consumption (1.93%) was low, primarily occurring during social events. Physical activity was common, with 57.97% of participants exercising daily and only 0.26% reporting no physical activity.

Regarding mental health status, 31.29% of participants exhibited moderate levels of depression, while 21.22% had severe depression and 2.27% had extremely severe depression, with a mean depression score of 7.15 (± 3.51). More than half (56.29%) demonstrated normal stress levels; however, 16.03% experienced moderate stress and 14.68% reported severe stress, with a mean stress score of 7.44 (± 3.85). Educational stress levels were high in 19.71% of participants, moderate in 16.36%, and low in 63.93%, with a mean educational stress score of 49.45 (± 8.82) (Table 1).

Quality of life among high school students in Cambodia

Quality of life among high school students was assessed across four domains: physical, psychological, social relationships, and environment. The highest prevalence of good QoL was observed in the environmental domain (14.26%, 95% Confidence Interval (CI): 12.39-16.37), while the lowest prevalence of good QoL was found in the psychological domain (10.49%, 95% CI: 8.87-12.36). The prevalence of poor, moderate, and good overall quality of life among high school students was 21.56% (95% CI: 19.31-23.98), 59.56% (95% CI: 56.75-62.32), and 18.88% (95% CI: 16.75-21.20), respectively (Table 2).

Factors Associated with the Good Quality of Life of the High School Students in Cambodia: Bivariate Analysis

Bivariate analysis was performed using simple logistic regression. Key factors significantly associated with good QoL included: being 20 years of age (Crude Odds Ratio (COR) = 2.46, 95% CI: 1.20-5.07), being in grade 12 (COR = 2.92, 95% CI: 1.96-4.36), having a father with bachelor-level education (COR = 1.95, 95% CI: 1.03-3.67), having a mother with bachelor-level education or above (COR = 2.40, 95% CI: 1.24-4.61), having a mother employed as a farmer (COR = 1.98, 95% CI: 1.23-3.17), participating in extracurricular activities (COR = 1.89, 95% CI: 1.26-2.74), experiencing low levels of educational stress (COR = 2.09, 95% CI: 1.35-3.24), having no depression (COR = 1.97, 95% CI: 1.29-3.02), and experiencing lower levels of general stress. The CORs for normal, mild, and moderate stress levels were 2.09 (95% CI: 1.27-3.45), 2.37 (95% CI: 1.30-4.32), and 2.31 (95% CI: 1.29-4.15), respectively (Table 3).

Association between Educational Stress and QoL among High School Students in Cambodia after Controlling for Other Covariates: Multilevel Mixed-Effects Analysis

Association between Educational Stress and QoL among High School Students in Cambodia after Controlling for Other Covariates: Multilevel Mixed-Effects Analysis

After controlling for the nested effects of provinces and other covariates using a generalized linear mixed model within a logistic regression framework, low to moderate educational stress was significantly associated with higher odds of good quality of life among high school students (Adjusted Odds Ratio (AOR) = 1.95, 95% CI: 1.26-3.02). Additionally, being in grade 12 and having normal to mild depression levels were also significantly associated with good quality of life (AOR = 2.87, 95% CI: 1.92-4.30, and AOR = 1.71, 95% CI: 1.14-2.58, respectively) (Table 4).

DISCUSSIONS

The results of this study highlight the complex relationship between educational stress and quality of life among high school students in Cambodia, where a substantial proportion of students experience mental health problems that significantly impact their overall well-being. These

Table 1. Baseline characteristics of the participants (n=1192)

Characteristics	Number (n)	Percentage (%)
Age (years)		
15	85	7.14
16-17	543	45.55
18-19	504	42.28
20	60	5.03
Mean ($\pm$ SD)	17.38 (1.19)	
Median (Min: Max)	17 (15: 20)	
Gender		
Male	534	44.80
Female	658	55.20
Family Monthly Income (USD)		
< 200	272	22.82
200-500	647	54.28
500-800	136	11.41
> 800	137	11.49
Mean ($\pm$ SD)	421.22 (291.19)	
Median (Min: Max)	317.07 (73.17: 1585.36)	
Father's education		
Primary School	97	8.14
Secondary School	159	13.34
High School	283	23.74
Vocational /Technical training	347	29.11
Bachelor	262	21.98
Master or Higher Degree	44	3.69
Mother Education		
Primary School	106	8.89
Secondary School	286	23.99
High School	399	33.47
Vocational /Technical training	274	22.99
Bachelor	125	10.49
Master or Higher Degree	2	0.17
Father's Occupation		
Government Officer	344	28.86
Self-employment/Business Owner	400	33.56
Employee	147	12.33
Farmer	297	24.92
Unemployment	4	0.33
Mother's Occupation		
Government Officer	149	12.51
Self-employment/Business Owner	606	50.84
Employee	132	11.07
Farmer	304	25.50
Unemployment	1	0.08
Tutoring class at weekends or holidays		
No	997	83.64
Yes	195	16.36

Extracurricular activities (hobbies or other special activities)

No	152	12.75
Yes	1040	87.25

Smoking

No	1,166	97.82
Yes (Parties or festival)	26	2.18

Alcohol consumption

No	1,169	98.07
Yes (parties or festival)	23	1.93

Physical activities

Never	3	0.26
Rarely	73	6.12
Sometimes	425	35.65
Everyday	691	57.97

Depression

Normal (0-4)	330	27.68
Mild (5-6)	209	17.54
Moderate (7-10)	373	31.29
Severe (11-13)	253	21.22
Extremely Severe (14+)	27	2.27

Mean ($\pm$ SD) 7.15 (3.51)

Median (Min: Max) 7 (0:19)

Stress

Normal (0-7)	671	56.29
Mild (8-9)	155	13.00
Moderate (10-12)	191	16.03
Severe (13-16)	175	14.68
Extremely severe (17+)		

Mean ($\pm$ SD) 7.44 (3.85)

Median (Min: Max) 7 (0:16)

Level of Educational Stress

Low ($\leq$ 50)	762	63.93
Moderate (51-58)	195	16.36
High ($>$ 58)	235	19.71

Mean ($\pm$ SD) 49.45 (8.82)

Median (Min: Max) 48 (18: 80)

findings underscore the urgent need for policy guidelines and coordinated interventions across relevant sectors, including the Ministry of Education, Youth and Sports, and the Ministry of Health.

Our study revealed that fewer than one-fifth of students reported good quality of life in Cambodia, which was considerably lower than the 36% prevalence reported in Thailand.⁵ However, poor quality of life is not uncommon among high school students globally.¹⁶ The limited quality of life among Cambodian high school students may be attributed to multifaceted factors, including socioeconomic hardships, educational barriers driven by multidimensional poverty, educational transitions, and cultural challenges.^{17,18} To address these issues, targeted educational programs

Table 2. Quality of life among high school students in Cambodia (n=1192)

Level of QoL	Number (n)	Percentage (%)	95% CI
Physical			
Poor (7-16)	237	19.88	17.71 to 22.25
Moderate (17-26)	811	68.04	65.33 to 70.63
Good (27-35)	144	12.08	10.35 to 14.06
Mean (± SD)	20.77 (±4.46)		
Median (Min: Max)	21 (9: 33)		
Psychological			
Poor (6-14)	271	22.73	20.44 to 25.21
Moderate (15-22)	796	66.78	64.05 to 69.39
Good (23-30)	125	10.49	8.87 to 12.36
Mean (±SD)	17.81 (±3.71)		
Median (Min: Max)	18 (7: 28)		
Social Relationship			
Poor (3-7)	394	33.05	30.44 to 35.78
Moderate (8-11)	668	56.04	53.20 to 58.84
Good (12-15)	130	10.91	9.26 to 12.81
Mean (±SD)	8.47 (±2.12)		
Median (Min: Max)	9 (4 :15)		
Environmental			
Poor (8-18)	189	15.86	13.89 to 18.04
Moderate (19-29)	833	69.88	67.21 to 72.42
Good (30-40)	170	14.26	12.39 to 16.37
Mean (±SD)	23.94 (±4.69)		
Median (Min: Max)	24 (11: 37)		
Overall QoL			
Poor (26-60)	257	21.56	19.31 to 23.98
Moderate (61-95)	710	59.56	56.75 to 62.32
Good (96-130)	225	18.88	16.75 to 21.20
Mean (±SD)	77.02 (±14.31)		
Median (Min: Max)	78 (41: 115)		

Table 3. Factors Associated with Good Quality of Life of the High School Students in Cambodia

Factors	Total Samples	Good QoL n (%)	COR	95% (CI)	P-value
Gender					0.284
Male	534	108 (20.22)	1		
Female	658	117 (17.78)	0.85	0.63-1.14	
Age (years)					0.013
15					
16 – 17	85	9 (10.59)	1		
18-19	543	90 (16.57)	1.67	0.81-3.47	
20	504	114 (22.62)	2.46	1.20- 5.07	
Levels of Study (Grades)					0.001
Grade 10th	317	34 (10.73)	1		
Grade 11th	275	35 (12.73)	1.21	0.73-2.01	
Grade 12th	600	156 (26.00)	2.92	1.96-4.36	

Family Monthly Income (USD)					0.065
< 200	272	44 (16.18)	1		0.039
200-500	647	115 (17.77)	1.12	0.77-1.64	
500-800	136	30 (22.06)	1.47	0.87-2.46	
> 800	137	36 (26.28)	1.85	1.12-3.04	
Father's education					0.039
Primary School	97	14 (14.43)	1		0.003
Secondary School	159	32 (20.13)	1.49	0.75-2.96	
High School	283	42 (14.84)	1.03	0.53-1.98	
Vocational / Technical training	347	61(17.58)	1.26	0.67-2.37	
Bachelor	262	65 (24.81)	1.95	1.03-3.67	
Master or Higher Degree	44	11(25.00)	1.97	0.81- 4.79	0.003
Mother Education					
Primary School	106	16 (15.09)	1		
Secondary School	286	40 (13.99)	0.91	0.48-1.71	
High School	399	73 (18.30)	1.25	0.69-2.27	
Vocational / Technical training	274	58 (21.17)	1.51	0.82-2.76	0.274
Bachelor and above	125	38 (29.92)	2.40	1.24-4.61	
Father's Occupation					
Government Officer	344	73 (21.22)	1		
Self-employment/ Business Owner	400	74 (18.50)	0.84	0.58-1.20	
Employee	147	31 (21.09)	0.99	0.61-1.59	0.023
Farmer	297	47 (15.61)	0.68	0.45-1.02	
Mother's Occupation					
Government Officer	149	49 (16.07)	1		
Self-employment/ Business Owner	606	20 (15.15)	0.93	0.52-1.64	
Employee	132	115 (18.98)	1.22	0.84-1.76	0.072
Farmer	304	41 (27.52)	1.98	1.23-3.17	
Tutoring class at weekends or holidays					
No	997	179	1		
Yes	195	46	1.41	0.97-2.03	
Extracurricular activities (hobbies or other special activities)					0.002
No	1040	182 (17.50)	1		<0.001
Yes	152	43 (28.29)	1.89	1.26-2.74	
Educational stress					
High	235	27 (11.49)	1	1	
Moderate	195	35 (17.95)	1.69	0.98-2.90	<0.001
Low	762	163 (21.39)	2.09	1.35-3.24	

Depression					0.010
Severe (11-13)	280	38 (13.57)	1		
Moderate (7-10)	373	65 (17.43)	1.34	0.87-2.07	
Mild (5-6)	209	44 (21.05)	1.70	1.05-2.74	
Normal (0-4)	330	78 (23.64)	1.97	1.29-3.02	
Stress					0.008
Severe & extremely severe (≥ 13)	189	20 (10.58)	1		
Moderate (10-12)	177	38 (21.47)	2.31	1.29-4.15	
Mild (8-9)	155	34 (21.94)	2.37	1.30-4.32	
Normal (0-7)	671	133 (19.82)	2.09	1.27-3.45	
Note: COR=Crude Odds Ratio, CI=Confidence Interval					

Table 4. Factors Associated with Good Quality of Life of the High School Students in Cambodia: Multivariable Analysis

Factors	Total Samples (n)	Good QoL n (%)	COR	AOR	95% (CI)	P-Value
Levels of Study (Grades)						<0.001
Grade 10 th	317	34(10.73)	1	1		
Grade 11 th	275	35(12.73)	1.21	1.28	0.77-2.13	
Grade 12 th	600	156(26.00)	2.92	2.87	1.92-4.30	
Depression						0.029
Severe (11-13)	280	38(13.57)	1	1		
Moderate (7-10)	373	65(17.43)	1.34	1.32	0.85-2.07	
Normal & Mild (0-6)	539	122(22.63)	1.86	1.71	1.14-2.58	
Levels Edu. Stress						0.003
High (>58)	235	27(11.49)	1	1		
Low & Moderate (≥ 58)	957	198 (20.69)	2.01	1.95	1.26-3.02	

Note: COR=Crude Odds Ratio, AOR=Adjusted Odds Ratio, CI=Confidence Interval

and vocational training initiatives are crucial for promoting personal development, enhancing self-esteem, and ultimately contributing to improved quality of life among students.

Educational stress emerged as a strong determinant of QoL in this study. The prevalence of educational stress in our study was lower than that reported in Thailand but higher than that observed in Vietnam, suggesting regional variations in academic pressure and educational system demands across Southeast Asian countries.^{5,19} Educational stress affects not only academic performance but also students' learning capacity, sleep quality, physical health, mental health, and substance use behaviors, thereby significantly impacting their overall quality of life.²⁰ Educational stress levels can be influenced by both academic pressures and non-academic

factors, including social relationships, financial conditions, and environmental circumstances.²¹ The significance of educational stress highlights the necessity for educational institutions to implement comprehensive support systems that address both academic and non-academic stressors to enhance the overall well-being and quality of life of students.

Depression was also strongly associated with QoL in our study. Students with normal or mild depression levels demonstrated better QoL compared to those with severe depression. Depression is a common mental health challenge among high school students, influenced by complex combinations of behavioral factors, academic pressure, and parental and social support system.^{5,22-24} The prevalence of mild to extremely severe depression in our study was 72.3%, which was twice as high as the rate reported in Thailand, and considerably higher than global estimates for adolescent depression, highlighting the urgent need for mental health interventions in Cambodia's educational system.^{5,25} The adolescent stage of the high school students are particularly vulnerable to develop mental health issues because of factors such as their living environment, experiences of stigma and discrimination, social exclusion, or insufficient access to quality support and services.²⁶ Given these findings, addressing the high prevalence of depression among high school students is imperative, as it significantly impacts their quality of life. Implementing comprehensive mental health initiatives in schools, including regular screenings, counseling services, and educational programs to reduce stigma, is crucial for effectively supporting students.

Our study found that grade level also influenced students' QoL. Students in Grade 12 demonstrated better QoL compared to those in Grade 10. However, this finding contrasts with a study conducted in Poland, where higher grade levels were associated with lower QoL.²⁷ This difference may be attributed to variations in parental expectations, academic pressure, and available support systems. As adolescent brain structures and functions develop with advancing age, the transition from dependence to self-sufficiency enables senior high school students to achieve greater maturity.²⁸ This developmental progression enhances their coping skills and resilience, enabling them to manage stress and adapt to challenges more effectively than their younger counterparts in Grade 10. Additionally, as students progress through their educational journey, they often develop stronger social networks and support systems, both of which are crucial contributors to positive QoL.²⁹ These findings underscore the importance of considering cultural, contextual, and individual differences when assessing QoL among students at different educational levels.

Beyond the factors that remained significant in the multivariate analysis, several sociodemographic characteristics demonstrated significant associations with

quality of life at the bivariate level. Students whose parents had attained higher educational levels, particularly those whose mothers held bachelor's degrees or higher, showed greater odds of reporting good QoL. This finding aligns with previous research linking higher parental education to greater emphasis on learning, improved access to educational resources, and supportive home environments conducive to academic and personal growth.³⁰ However, this association did not persist after adjustment for other factors, highlighting the more direct impact of students' current academic and psychological experiences on their well-being.

Similarly, family monthly income was positively associated with QoL in the bivariate analysis, with students from higher-income households tending to report better QoL. Higher socioeconomic status often reflects better access to educational facilities, nutrition, and opportunities, all of which may contribute to students' well-being.³¹ Nevertheless, the loss of statistical significance in the multivariable model suggests that material resources alone do not guarantee good QoL for adolescents, and that psychological and school-related factors may play a more critical role.

Maternal occupation was also associated with QoL at the bivariate level; specifically, students whose mothers worked as farmers reported higher QoL. The rationale for this finding remains unclear and may be influenced by unmeasured confounders such as family structure, rural versus urban living conditions, or parental availability. This association, however, did not persist after controlling covariates.

Participation in extracurricular activities, including hobbies and special interests, was associated with better QoL in the bivariate analysis. Engaging in activities outside the classroom has been shown to foster social skills, self-esteem, and resilience among adolescents.³² The loss of this relationship in the multivariable analysis suggests that the benefits of extracurricular engagement may operate indirectly through improvements in mental health and reductions in perceived academic stress, rather than having direct effects on QoL.

Finally, factors such as family structure and tutoring at weekends or holidays were not statistically significant predictors of good QoL even in bivariate analysis, suggesting that their influence may be minor or context-dependent among Cambodian high school students.

Implications and Recommendations

Based on study findings, targeted interventions are needed to enhance quality of life among Cambodian high school students. Given that educational stress significantly determines QoL, schools should prioritize stress management programs and create supportive learning environments. The strong association between depression and poor QoL highlights the urgent need for comprehensive

mental health support systems, including routine screening and accessible counseling services within schools.

Collaboration between the Ministry of Health and education sector is essential for developing integrated approaches to student mental health. Since fewer than one-fifth of students reported good QoL, systematic interventions targeting the specific factors identified educational stress and depression are critical. Culturally appropriate strategies that address these evidence-based determinants will be most effective in improving students' educational experiences and overall well-being.

Strengths and limitations of the study

This study represents a pioneering effort examining quality of life and educational stress among high school students across four distinct geographical regions of Cambodia. These findings provide evidence for relevant sectors, including the Ministry of Education, Youth, and Sports and the Ministry of Health, to develop targeted educational policies and mental health interventions.

Despite comprehensive efforts, several limitations should be acknowledged. First, the study focused on specific regions of Cambodia (plain, Tonle Sap, coastal, and plateau/mountain regions), limiting generalizability nationwide. Second, the study did not fully explore barriers to early diagnosis or treatment of poor QoL and educational stress, including mental health information access and implementation challenges. Third, memory recall bias may have influenced responses. Finally, the cross-sectional design limits the ability to establish causal relationships between educational stress, mental health status, and QoL. Future research should employ longitudinal designs, such as prospective cohort studies, to better establish causality.

CONCLUSION

Fewer than one-fifth of Cambodian high school students reported good quality of life. Educational stress emerged as a significant determinant of QoL, with grade level and depression status showing strong associations. These findings highlight the critical need for evidence-based interventions targeting educational stress and mental health to improve student well-being in Cambodia's evolving educational context.

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