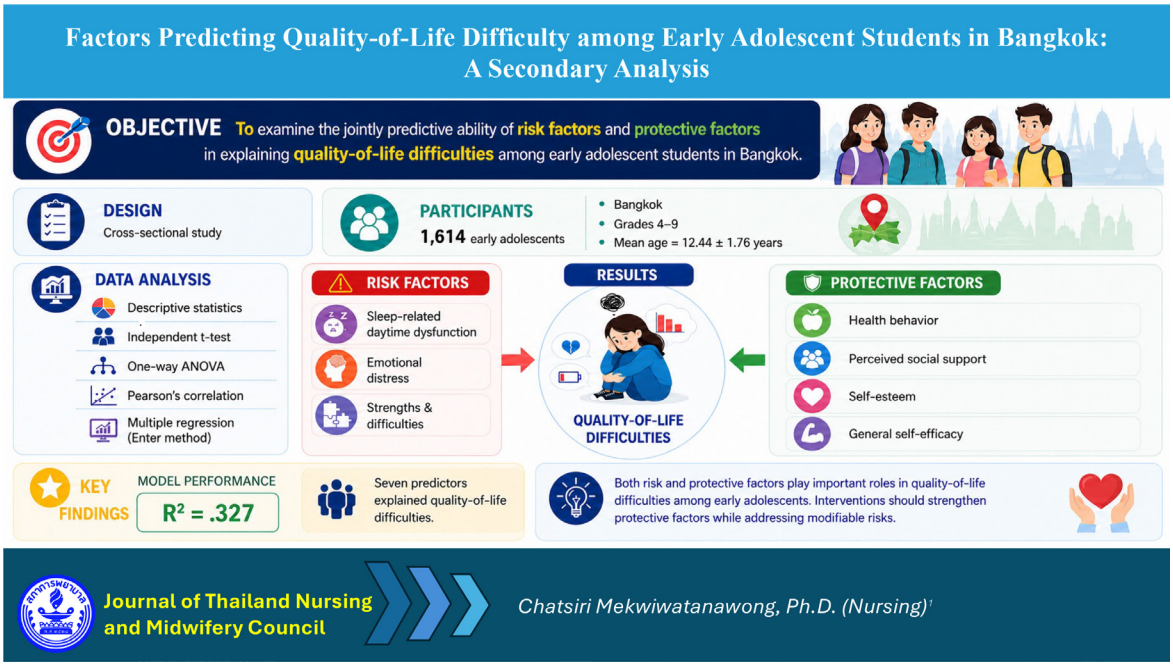
Factors Predicting Quality-of-Life Difficulty among Early Adolescent Students in Bangkok: A Secondary Analysis

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Extended Abstract

Introduction Quality of life is a critical outcome indicator in both school health nursing and adolescent nursing. Urban students, particularly those in Bangkok, experience multiple pressures related to academic demands, sleep and rest, family, and social contexts, all of which may be associated with difficulties in quality of life. Previous projects have examined health behaviors and quality of life among adolescents in Bangkok; however, the primary studies reported only prevalence and bivariate associations. The present secondary data analysis was therefore conducted to investigate predictors of quality-of-life difficulties among early adolescents in Bangkok, utilizing data from the main project and guided by the conceptual framework of stress and coping. The findings are intended to inform strategies to improve the quality of life of early adolescents in Bangkok.

Objective The objective of this study was to examine the jointly predictive ability of risk factors (sleep related daytime dysfunction, emotional distress, and strengths and difficulties) and protective factors (health behavior, perceived social support, self-esteem, and general self-efficacy) in explaining quality-of-life difficulties among early adolescent students in Bangkok.

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Design This research employed a cross-sectional design through predictive secondary data analysis.

Methodology The study sample comprised 1,614 students in Bangkok, ranging from Grade 4 in primary school to Grade 9 in lower secondary school, drawn from the main project. Data collection in the primary study utilized a series of standardized instruments, including: a personal information questionnaire; a quality-of-life questionnaire encompassing domains of health and activities, emotional well-being, social relationships, and learning; the Adolescent Lifestyle Questionnaire (ALQ); the Sleep-Related Daytime Dysfunction scale (SRDD); the Multidimensional Scale of Perceived Social Support (MSPSS); the Rosenberg Self-Esteem Scale (RSES); the General Self-Efficacy scale (GSE); the Depression Anxiety Stress Scale (DASS); and the Strengths and Difficulties Questionnaire (SDQ). Data were analyzed using descriptive statistics, independent t-tests, one-way analysis of variance (ANOVA), Pearson's correlation analysis, and multiple regression analysis with the Enter method.

Results The participants had a mean age of 12.44 years (SD = 1.76). The proportion of males (50.1%) was nearly equal to that of females (49.9%). More than half of the students were enrolled in lower secondary school (Grades 7-9) (52.7%). Fathers and mothers most frequently attained education at the bachelor's level or higher (38.0% and 39.3%, respectively). Results from the multiple regression analysis indicated that the seven predictors together explained 32.7% of the variance in quality-of-life difficulties ($R^2 = .327$, adjusted $R^2 = .324$, $F = 111.36$, $p < .001$). Emotional distress emerged as the strongest predictor ($\beta = .381$, $p < .001$), followed by strengths and difficulties ($\beta = .184$, $p < .001$), self-efficacy ($\beta = -.181$, $p < .001$), sleep-related daytime dysfunction ($\beta = .063$, $p = .005$), self-esteem ($\beta = .063$, $p = .003$), and perceived social support ($\beta = -.055$, $p = .024$). Health behavior was not a significant predictor ($\beta = -.034$, $p = .190$).

Recommendation Given that emotional distress was identified as the strongest predictor of quality-of-life difficulties, school health nurses should prioritize the development of programs that emphasize mental health care and the empowerment of students. Such programs should integrate systematic assessment of students' strengths and difficulties, alongside interventions that address emotional well-being, sleep hygiene, self-esteem, and social support. By adopting a comprehensive and integrative approach, school health nurses can help reduce quality-of-life difficulties and foster more effective learning within the school environment.

Keywords quality-of-life difficulty/ early adolescents/ sleep-related daytime dysfunction/ psychosocial factors/ school health

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ปัจจัยทำนายความยากลำบากด้านคุณภาพชีวิตของนักเรียนวัยรุ่นตอนต้นในกรุงเทพมหานคร: การวิเคราะห์ทุติยภูมิ

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บทคัดย่อขยาย

บทนำ คุณภาพชีวิตเป็นตัวชี้วัดผลลัพธ์ที่สำคัญในการพยาบาลอนามัยโรงเรียนและการพยาบาลวัยรุ่น นักเรียนในเขตเมืองโดยเฉพาะในกรุงเทพมหานครเผชิญความกดดันด้านการเรียน การนอนหลับพักผ่อน ครอบครัว และสังคม ซึ่งอาจสัมพันธ์กับความยากลำบากด้านคุณภาพชีวิต ที่ผ่านมาได้มีโครงการศึกษาพฤติกรรมสุขภาพและคุณภาพชีวิตของวัยรุ่นในเขตกรุงเทพมหานคร แต่การศึกษาหลักรายงานเพียงความชุกและความสัมพันธ์เชิงคู่ การวิเคราะห์ข้อมูลทุติยภูมิในครั้งนี้จึงทำการศึกษาปัจจัยทำนายความยากลำบากด้านคุณภาพชีวิตของนักเรียนวัยรุ่นตอนต้นในกรุงเทพมหานคร โดยใช้ข้อมูลจากโครงการหลักและใช้กรอบแนวคิดความเครียดและการเผชิญปัญหา ทั้งนี้เพื่อเป็นข้อมูลในการพัฒนาแนวทางการส่งเสริมคุณภาพชีวิตของนักเรียนวัยรุ่นตอนต้นในกรุงเทพมหานครต่อไป

วัตถุประสงค์การศึกษาครั้งนี้มีวัตถุประสงค์เพื่อศึกษาความสามารถในการร่วมทำนายความยากลำบากด้านคุณภาพชีวิตของปัจจัยเสี่ยง (ภาวะง่วงนอนและบกพร่องในเวลากลางวัน ความเครียดทางอารมณ์ และจุดแข็งและจุดอ่อน และปัจจัยปกป้อง (พฤติกรรมสุขภาพ การรับรู้แรงสนับสนุนทางสังคม ความรู้สึกมีคุณค่าในตนเอง และการรับรู้ความสามารถทั่วไปของตนเอง) ในนักเรียนวัยรุ่นตอนต้นในกรุงเทพมหานคร

การออกแบบการวิจัย การวิจัยครั้งนี้เป็นการศึกษาแบบภาคตัดขวาง โดยการวิเคราะห์ข้อมูลทุติยภูมิเชิงทำนาย

วิธีดำเนินการวิจัย กลุ่มตัวอย่างในการศึกษาครั้งนี้เป็นนักเรียนในกรุงเทพมหานคร ระดับประถมศึกษาปีที่ 4 ถึงมัธยมศึกษาปีที่ 3 จำนวน 1,614 คน ที่ได้จากการศึกษาหลัก เครื่องมือที่ใช้เก็บรวบรวมข้อมูลในการศึกษาหลัก ได้แก่ แบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามคุณภาพชีวิตที่ครอบคลุมด้านสุขภาพและกิจกรรม อารมณ์ สังคม และการเรียน แบบสอบถามพฤติกรรมสุขภาพ (Adolescent lifestyle questionnaire, ALQ) แบบสอบถามภาวะง่วงนอนและบกพร่องในเวลากลางวัน (Sleep-related daytime dysfunction, SRDD) แบบสอบถามการรับรู้แรงสนับสนุนทางสังคมหลายมิติ (Multidimensional scale of perceived social support, MSPSS) แบบสอบถามความรู้สึกมีคุณค่าในตนเอง (Rosenberg self esteem scale, RSES) แบบสอบถามการรับรู้ความสามารถแห่งตน

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(General self efficacy, GSE) แบบสอบถามความเครียดทางอารมณ์ (Depression anxiety stress scale, DASS) และแบบสอบถามจุดแข็งและจุดอ่อน (Strength and difficulty questionnaire, SDQ) วิเคราะห์ข้อมูลด้วยสถิติบรรยาย การทดสอบทีแบบอิสระ การวิเคราะห์ความแปรปรวนทางเดียว การวิเคราะห์ความสัมพันธ์ของเพียร์สัน และการวิเคราะห์ถดถอยพหุคูณ แบบ Enter

ผลการวิจัย กลุ่มตัวอย่างมีอายุเฉลี่ย 12.44 ปี (SD 1.76) เป็นเพศชาย (ร้อยละ 50.1) ใกล้เคียงกับเพศหญิง (ร้อยละ 49.9) มากกว่าครึ่งศึกษาชั้นมัธยมศึกษา 1-3 (ร้อยละ 52.7) บิดาและมารดาของกลุ่มตัวอย่างศึกษาในระดับปริญญาตรีขึ้นไปมากที่สุด (ร้อยละ 38.0 และ 39.3 ตามลำดับ) ผลการวิเคราะห์ถดถอยพหุคูณพบว่า ตัวแปรทำนายทั้ง 7 ปัจจัยร่วมกันอธิบายความแปรปรวนของความยากลำบากด้านคุณภาพชีวิตได้ร้อยละ 32.7 (R^2 = .327, adjusted R^2 = .324, F = 111.36, p < .001) โดยความเครียดทางอารมณ์สามารถทำนายความยากลำบากด้านคุณภาพชีวิตได้สูงที่สุด (β = .381, p < .001) รองลงมาคือจุดแข็งและจุดอ่อน (β = .184, p < .001) การรับรู้ความสามารถของตนเอง (β = -.181, p < .001) ภาวะง่วงนอนและบกพร่องในเวลากลางวัน (β = .063, p = .005) ความรู้สึกมีคุณค่าในตนเอง (β = .063, p = .003) และการรับรู้แรงสนับสนุนทางสังคม (β = -.055, p = .024) ส่วนพฤติกรรมสุขภาพไม่มีนัยสำคัญ (β = -.034, p = .190)

ข้อเสนอแนะ เนื่องจากความเครียดทางอารมณ์เป็นตัวทำนายที่สำคัญที่สุด พยาบาลอนามัยโรงเรียนควรพัฒนาโปรแกรมที่มุ่งเน้นการดูแลสุขภาพจิตและการเสริมสร้างศักยภาพของนักเรียนเป็นหลัก โดยบูรณาการการประเมินจุดแข็งและจุดอ่อนของนักเรียนและการสนับสนุนทั้งด้านอารมณ์ การนอนหลับ การเห็นคุณค่าในตนเอง และการสนับสนุนทางสังคม เพื่อช่วยลดความยากลำบากด้านคุณภาพชีวิตและส่งเสริมการเรียนรู้ที่มีประสิทธิภาพในโรงเรียน

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คำสำคัญ ความยากลำบากด้านคุณภาพชีวิต วัยรุ่นตอนต้น ภาวะง่วงนอนและบกพร่องในเวลากลางวัน ปัจจัยทางจิตสังคม อนามัยโรงเรียน

วันที่ได้รับ 20 พ.ค. 69 วันที่แก้ไขบทความเสร็จ 26 มิ.ย. 69 วันที่รับตีพิมพ์ 14 ก.ค. 69

Background and Significance

There is a growing recognition of the importance of measuring quality of life (QOL) for children and young people. QOL outcomes measure both the physical and psychological well-being of individuals, as well as the impact of an illness or condition on them and their families. Health-related quality of life (HRQOL) outcomes specifically measure the impact of health issues on individuals and capture how these issues affect the day-to-day lives of children and young people.[1-3] Quality-of-life outcomes are particularly relevant to school-aged children and adolescents from the perspectives of nurses and public health professionals, as many early indicators of physical and psychological well-being or dysfunction can be identified through school attendance, classroom behavior, peer social interaction, activity level, and self-rated QOL.[3] In this study, quality-of-life difficulties refer to problem-oriented perceptions of impaired daily functioning across the physical/health and activity, emotional, social, and school domains, such that higher scores indicate greater difficulty and, therefore, poorer quality of life.

Physical growth, sleep changes, school demands, and family and peer pressures converge during early adolescence. Fluctuations in emotions, behaviors, and sleep can negatively affect a young adolescent's physical and psychological health and impact his or her daily functioning in school and at home.[4-6] Many of these issues are global, with sleepiness and sleep problems linked to a variety of poor outcomes for children and adolescents, including decreased school functioning and less optimal psychosocial outcomes.[4-6]

Quality of life has many dimensions, and how each is defined shapes its relationship with influencing factors. In general, protective factors enhance functioning and reduce the risk of poor quality of life, whereas risk factors impair functioning and increase quality-of-life difficulties; both operate through a variety of pathways.7-12 For instance, factors that increase perceptions of physical, emotional, social, and school-related assets (e.g., optimism, social support, healthy lifestyle behaviors) can counterbalance the effects of perceived difficulties in physical, emotional, social, and school-related aspects of functioning (e.g., emotional distress, behavioral problems). In addition, perceived quality of life in adolescents may be predicted by their overall level of self-esteem and the extent to which they view themselves positively. For this secondary analysis, negatively worded items on the Rosenberg Self-Esteem Scale (RSES) were reverse-scored so that higher total scores indicate higher self-esteem. Resources, support, expectations, and health-promoting environments (e.g., access to healthy foods, opportunities for physical activity) often derive from characteristics of the family's contextual environment, such as parental education.

In Thailand, school health nurses and community health nurses are well-positioned to identify adolescents who report daytime sleepiness, emotional symptoms, peer difficulties, and school-related problems. Previous Thai research also reported relationships among sleep duration, internet and telephone use, and behavioral problems among school-aged children in Bangkok.[7] Existing evidence, however, remains limited: most data come from Western or international populations, and sleep, emotional, behavioral, and psychosocial factors have typically been examined individually rather than together within a single multivariable model. The key gap lies in the main project itself. The main project reported the prevalence of

quality-of-life difficulties and the bivariate associations of health behaviors with quality of life,[8] but it did not model these factors together in a predictive, multivariable framework. It therefore could not establish which factors matter most after accounting for the others, leaving the relative importance of sleep-related, psychosocial, and behavioral factors unresolved in this population. The present analysis addresses this gap by re-analyzing the available data from the main project Health Behaviors and Quality of Life of Adolescents in Bangkok Metropolitan Area, moving beyond description and bivariate association to the simultaneous, adjusted estimation of multiple predictors, in order to identify the factors that most strongly predict quality-of-life difficulties among early adolescent students in Bangkok and to inform school health nursing assessment and intervention.

Objective

To investigate the jointly predictive ability of risk factors (sleep related daytime dysfunction, emotional distress, and strengths and difficulties) and protective factors (health behavior, perceived social support, self-esteem, and general self-efficacy) in explaining quality-of-life difficulties among early adolescent students in Bangkok.

Hypothesis

Risk-related factors (sleep related daytime dysfunction, emotional distress, and strengths and difficulties), and protective factors (health behavior, perceived social support, self-esteem, and general self-efficacy) jointly predict quality-of-life difficulties among early adolescent students in Bangkok.

Conceptual Framework

The conceptual framework of this study was developed from a literature review on quality of life in adolescents and guided by the transactional stress-coping framework by Lazarus and Folkman, in which appraisal of stressors and available coping resources shape adaptation.[9] In this study, emotional distress, strength and difficulties, and sleep-related daytime dysfunction were included as risk-related predictors that may deplete adaptive resources and constrain functioning, whereas perceived social support, self-esteem, general self-efficacy, and healthy lifestyle behaviors were treated as protective resources that may support coping and adaptation. Quality-of-life difficulty was the multidimensional dependent outcome across health/activity, feelings, social, and school functioning. These seven factors were classified into two predictor domains, risk-related factors and protective factors, predicting quality-of-life difficulties. (Figure 1)

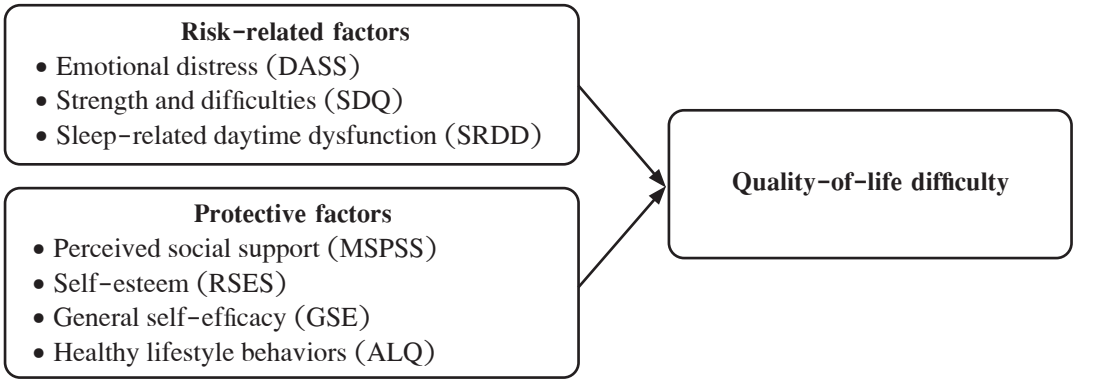


Figure 1 Conceptual Framework

Design

This study employed a descriptive correlational design. This study was a secondary analysis of cross-sectional data from the main project entitled Health Behaviors and Quality of Life of Adolescents in Bangkok Metropolitan,[8] The secondary analysis was not part of the main project; it was developed after completion of the main project.

Methodology

Population and Sample

Target population was students in Grades 4 to 9 attending participating primary and lower-secondary schools in the Bangkok Metropolitan Area.

Sample included 1,614 students in Grades 4 to 9 attending participating primary and lower-secondary schools in the Bangkok Metropolitan Area, selected from the main study according to the following eligibility criteria: enrolment in Grade 4 to Grade 9, age 9-16 years, and ability to read and complete the questionnaire.

Sampling method

The main project used a multistage random sampling design. From all 158 primary and secondary schools under the Office of the Basic Education Commission (OBEC) in the Bangkok Metropolitan Area, 10 schools (5 primary and 5 secondary) were selected by simple random sampling (drawing lots without replacement). Within each selected school, four classrooms per eligible grade were randomly selected, and all students in those classrooms were invited to participate after parental consent and student assent procedures.

Sample size

Based on the sampling method, with an average of approximately 20 students per classroom, this yielded about 80 students per grade per school. Accounting for an anticipated nonreturn rate of 30%, the target sample size was approximately 3,000 students across Grades 4-9. Ultimately, a total of 3,155 students were included in the main study. The sample consisted of 1,614 students, representing 51.2% of the participants in the main study, who completed the questionnaires required for this secondary analysis.

Setting

The main project was conducted in primary and lower secondary schools in the Bangkok Metropolitan Area. The study setting comprised classrooms in the selected schools; students received self-administered psychosocial and health-behavior questionnaires to complete as take-home questionnaires and return them through their schools. Demographic and family context information was obtained using the general demographic questionnaire from the main project. The 10 participating schools were government (public) schools under the Office of the Basic Education Commission (OBEC) and were distributed across the Bangkok Metropolitan Area; no private schools were included.

Instruments

Demographic questionnaire The main project collected demographic and family-context information using a general demographic questionnaire. Variables used in this secondary analysis included age, gender, school grade, father's education, and mother's education.

Quality of life was measured using 23 items across four domains: physical, emotional, social, and school functioning. The items are part of the Pediatric Quality of Life Inventory 4.0 Generic Core Scales, which have been validated cross-culturally and used in research with Thai children.[1,2] Each item was

coded from 1 to 5 in the retained dataset, and the 23 problem-oriented items were summed to form quality-of-life difficulty (possible scores 23-115). Thus, quality-of-life difficulty was operationalized as a modified raw problem-oriented score, with higher scores indicating greater quality-of-life difficulty. It was not reverse-scored or transformed to the standard 0-100 PedsQL metric and should not be interpreted using standard PedsQL norms or cut-off points.

Sleep-related daytime dysfunction (SRDD) was measured using the eight items of the Pediatric Daytime Sleepiness Scale (PDSS). The PDSS items assessed sleepiness during class, drowsiness while doing homework, alertness, tiredness or irritability during the day, difficulty getting out of bed in the morning, falling asleep again after waking, perceived need for someone else to wake the student, and perceived need for more sleep. The eight items were summed to yield the SRDD score, which ranges from 0 to 32, with higher scores indicating greater sleep-related daytime dysfunction.[6]

Psychosocial and behavioral factors were assessed with the 41-item Adolescent Lifestyle Questionnaire (ALQ; possible score 41-205),[11] the 12-item **Multidimensional Scale of Perceived Social Support (MSPSS)**; possible score 12-84),[13] the 10-item **Rosenberg Self-Esteem Scale (RSES)**; possible score 10-40),[14] the 10-item **General Self-Efficacy Scale (GSE)**; possible score 10-40),[10] the 21-item **Depression Anxiety Stress Scales (DASS-21)**,[15] and the 25-item **Strengths and Difficulties Questionnaire (SDQ)**.[12,16] Negative items were reverse-scored so that higher totals indicated higher self-esteem. In the main database, DASS-21 item responses were coded from 1 to 4 rather than the conventional 0 to 3, and the items were summed to produce a modified raw score ranging from 21 to 84. Higher scores indicated greater overall emotional distress. This retained total was used as a continuous predictor and was not interpreted using the standard DASS-21 subscale severity categories or cut-off points. The SDQ questionnaire includes five domains: conduct problems, hyperactivity/ inattention, emotional problems, peer problems, and prosocial behavior. In the retained main dataset, items were coded 1-3 per item according to the main project's data-entry and scoring convention rather than converted to the conventional 0-2 item metric. The prosocial items were reverse-oriented before summation, so that higher composite scores represented greater overall behavioral and psychosocial difficulty. All 25 items were summed to produce a modified 25-item raw SDQ composite with a possible range of 25-75. Because this retained composite included the prosocial domain and used 1-3 coding, it was not the standard 20-item SDQ Total Difficulties Score (0-40); standard SDQ cut-offs were not applied. The 1-3 coding was retained to remain consistent with the variable actually available and analyzed in the secondary dataset, not because the conventional 0-2 coding lacks meaning. The Thai-version SDQ used in the main project was the version disseminated by the Department of Mental Health, Ministry of Public Health, Thailand, for school-based screening.[16] Instrument administration and applicable permissions were handled within the main project; the present secondary analysis used only de-identified derived scores and did not re-administer the instruments.

Reliability estimates were derived from a previously published multinational study of adolescents employing identical or closely comparable scales.[17] Reported internal consistency coefficients were as follows: PedsQL subscales, Cronbach's alpha coefficient = .72–.81; PDSS total, Cronbach's alpha coefficient = .80; MSPSS subscales, Cronbach's alpha coefficient = .88–.90; RSES total, Cronbach's alpha coefficient = .72; SDQ subscales, Cronbach's alpha coefficient = .58–.70; ALQ subscales, Cronbach's alpha coefficient α = .65–.87; GSE subscales, Cronbach's alpha coefficient = .75–.95; and DASS subscales, Cronbach's alpha coefficient = .74–.94. The Thai version of the PedsQL has established validity, and the quality-of-life difficulty scale demonstrated strong internal consistency in the present sample (Cronbach's alpha coefficient = .86). Reliability estimates for the remaining retained composite scores were not available and are acknowledged as a study limitation.

Data collection

No additional data were collected for this secondary analysis. The analytic data were derived from the main study on adolescent health behavior and quality of life in Bangkok. In the main project, questionnaires were distributed after parental consent and student assent and completed as a take-home. Completed questionnaires were returned through participating schools. De-identified individual-level data were analyzed, and findings are reported only in aggregate form. The main project received ethical approval from the Human Research Ethics Committee, Faculty of Medicine Ramathibodi Hospital, Mahidol University (MURA2014/350/N1). The present secondary analysis was approved by the same committee (COA. MURA2022/1936; approved December 8, 2022) and involved no additional participant contact.

Data analysis

IBM SPSS Statistics was used for data analysis. Demographic characteristics and study variables were analyzed using descriptive statistics. Quality-of-life difficulties were analyzed for gender differences using Independent t-test, and for school level and parental education using One-way ANOVA. Pearson's correlation coefficients were calculated to examine bivariate associations among the variables. A multiple linear regression model was specified to assess seven adolescent-reported, potentially modifiable factors (ALQ, SRDD, MSPSS, RSES, GSE, DASS-21, and the modified SDQ composite), which were entered simultaneously using the Enter method. Prior to regression analysis, the assumptions of normality using Kolmogorov Smirnov test, homoscedasticity, linearity, and independence of residuals (no autocorrelation) were tested and met. Multicollinearity was assessed by estimating variance inflation factors (VIFs) from the complete-case predictor correlation matrix, with all values within acceptable ranges. Model fit was examined using R, R^2, adjusted R^2, F statistics, regression coefficients, and 95% confidence intervals. The level of significance was set at .

Results

The participants had a mean age of 12.44 years (SD = 1.76). The proportion of males (50.1%) was nearly equal to that of females (49.9%). More than half of the participants were enrolled in Secondary levels 1–3 (52.7%). Regarding parental education, fathers most frequently attained tertiary

education (38.0%), and mothers likewise had tertiary education as the highest proportion (39.3%).

Comparing quality-of-life difficulty by gender, the mean score in females was slightly higher than that of males. However, the statistical test (t = -1.280, p = .201) indicated no significant difference, suggesting that the level of quality-of-life difficulty did not differ substantially between male and female participants. When considering school level, the mean scores varied slightly across grades. Students in Primary 5 and Secondary 1 reported somewhat higher mean scores, while those in Primary 4 had the lowest. Nevertheless, One-way ANOVA showed no statistically significant differences among school levels. Regarding father's education, a statistically significant difference was observed (F = 5.070, p = .002). Participants whose fathers had attained primary or junior high school education reported greater quality-of-life difficulty, whereas those whose fathers had tertiary education reported the lowest mean score. Similarly, mother's education also showed statistically significant differences (F = 4.580, p = .003). Students of mothers with primary and junior high school education reported greater quality-of-life difficulty, while those whose mothers had a tertiary education reported the lowest mean score (Table 1).

Table 1 Comparisons of quality-of-life difficulty by contextual factors of the participants (n = 1,614)

Contextual factors	n	Mean	SD	Statistical test
Gender				
Male	809	48.55	12.90	t = -1.280, p = .201
Female	805	49.34	11.91	
School level				
Primary 4	256	47.54	13.84	F = 1.910, p = .090
Primary 5	266	50.06	10.44	
Primary 6	242	48.02	12.76	
Secondary 1	273	50.04	13.11	
Secondary 2	306	48.52	12.12	
Secondary 3	271	49.35	12.02	
Father's education				
Primary school/equivalent	310	50.40	12.51	F = 5.070, p = .002
Junior high school/equivalent	327	49.47	12.11	
Senior high school/equivalent	363	49.73	11.96	
Tertiary education	614	47.45	12.77	
Mother's education				
Primary school/equivalent	326	50.13	12.95	F = 4.580, p = .003
Junior high school/equivalent	291	50.27	12.02	
Senior high school/equivalent	362	49.12	11.40	
Tertiary education	635	47.61	12.81	

The descriptive analysis reveals that the mean score for quality-of-life difficulty (QOL) was 48.94 (SD = 12.42), with possible scores ranging from 23 to 115. Adolescent lifestyle (ALQ) had a mean of 136.18 (SD = 22.55), suggesting generally favorable lifestyle patterns, though scores varied widely (41–205). Sleep-related daytime dysfunction (SRDD) averaged 17.24 (SD = 5.87), with possible scores ranging from 0 to 32. Perceived social support (MSPSS) showed a mean of 62.32 (SD = 13.58), with possible scores spanning from 12 to 84. For psychological resources, self-esteem (RSES) averaged 22.31 (SD = 3.70), while general self-efficacy (GSE) had a mean of 24.26 (SD = 5.47). The mean emotional distress (DASS-21) was 39.30 (SD = 10.61), with possible scores ranging from 21 to 84. Finally, behavioral and emotional difficulties (SDQ composite) averaged 46.81 (SD = 5.23), with possible scores ranging from 25 to 75. (Table 2)

Table 2 Description of the main study variables (n = 1,614)

Variables	Mean	SD	Possible score
Quality-of-life difficulty	48.94	12.42	23–115
Adolescent lifestyle	136.18	22.55	41–205
Sleep-related daytime dysfunction	17.24	5.87	0–32
Perceived social support	62.32	13.58	12–84
Rosenberg self-esteem	22.31	3.70	10–40
General self-efficacy	24.26	5.47	10–40
Depression Anxiety Stress	39.30	10.61	21–84
Strengths and difficulties score	46.81	5.23	25–75

The correlation analysis revealed relationships among the study variables. Quality-of-life (QOL) difficulty was positively correlated with sleep-related daytime dysfunction (SRDD), emotional distress (DASS), and behavioral difficulties (SDQ), indicating that greater sleep problems, psychological distress, and behavioral challenges were associated with greater QOL difficulty. Conversely, QOL was negatively correlated with adolescent lifestyle (ALQ), perceived social support (MSPSS), and general self-efficacy (GSE), suggesting that healthier lifestyle patterns, stronger social support, and greater self-efficacy were associated with fewer QOL difficulties. Among the psychosocial variables, social support (MSPSS) showed strong positive correlations with both adolescent lifestyle (ALQ) and self-efficacy (GSE), highlighting the interconnected role of supportive networks in promoting healthier behaviors and confidence. Self-efficacy (GSE) was also positively associated with lifestyle and social support, further reinforcing its protective role. On the other hand, emotional distress (DASS) was strongly and positively correlated with both sleep dysfunction (SRDD) and behavioral difficulties (SDQ), while negatively correlated with social support (MSPSS), self-esteem (RSES), and self-efficacy (GSE). This pattern underscores the detrimental impact of distress on psychological resources and functioning. (Table 3)

Table 3 Correlation matrix of the study variables (n=1,614)

Variables	1	2	3	4	5	6	7	8
1. QOL	1							
2. ALQ	-.220**	1						
3. SRDD	.282**	-.105**	1					
4. MSPSS	-.182**	.521**	-.038*	1				
5. RSES	-.062*	.060*	-.187**	.048	1			
6. GSE	-.217**	.471**	-.107**	.333**	.026	1		
7. DASS	.510**	-.202**	.318**	-.210**	-.193**	-.110**	1	
8. SDQ	.305**	.136**	.226**	.130**	-.122**	.234**	.439**	1

* p < .05; ** p < .01. QOL: quality-of-life difficulty; ALQ: Adolescent Lifestyle Questionnaire score; SRDD: sleep-related daytime dysfunction; MSPSS: Multidimensional Scale of Perceived Social Support; RSES: Rosenberg Self-Esteem Scale; GSE: General Self-Efficacy Scale; DASS: DASS-21 raw summed emotional-distress score; SDQ: 25-item SDQ composite

Multiple regression analysis examined the predictive factors associated with quality-of-life (QOL) difficulties among participants. The overall model was statistically significant, , and accounted for approximately 32.7% of the variance in QOL difficulty (, adjusted). Among the predictors, sleep-related daytime dysfunction (SRDD) emerged as a significant positive contributor, indicating that greater daytime impairment due to poor sleep was associated with increased QOL difficulties. Similarly, higher scores on the emotional distress (Depression Anxiety Stress, DASS) and the Strengths and Difficulties (SDQ) were strong positive predictors, reflecting that emotional distress and behavioral difficulties substantially heightened QOL difficulties. Conversely, general self-efficacy (GSE) was a robust negative predictor, suggesting that adolescents with higher confidence in their ability to manage situations experienced fewer QOL difficulties. Perceived social support (MSPSS) also showed a protective effect, with greater support linked to reduced QOL difficulties. Self-esteem (RSES) was positively associated with QOL difficulties. Adolescent lifestyle (health behaviors) did not significantly predict QOL difficulties when other psychological and social variables were considered. (Table 4)

Table 4 Multiple regression analysis of predictive factors of quality-of-life difficulties (n = 1,614)

Variables	B	SE	Beta	t	p-value	95% CI for B
Constant	19.150	3.369		5.685	< .001	12.543 to 25.758
ALQ (Adolescent lifestyle/health behaviors)	-0.019	0.014	-.034	-1.310	.190	-0.047 to 0.009
SRDD (Sleep-related daytime dysfunction score)	0.136	0.048	.063	2.845	.005	0.042 to 0.230

Table 4 Multiple regression analysis of predictive factors of quality-of-life difficulties (n = 1,614) (Cont.)

Variables	B	SE	Beta	t	p-value	95% CI for B
MSPSS (Perceived social support score)	-0.053	0.023	-.055	-2.258	.024	-0.099 to -0.007
RSES (Rosenberg self-esteem score)	0.219	0.073	.063	2.983	.003	0.075 to 0.363
GSE (General self-efficacy score)	-0.416	0.056	-.181	-7.454	< .001	-0.525 to -0.307
DASS (Depression Anxiety Stress score/emotional distress)	0.452	0.031	.381	14.724	< .001	0.392 to 0.512
SDQ (Strengths and Difficulties score)	0.452	0.062	.184	7.346	< .001	0.331 to 0.573

$R = .572$, $R^2 = .327$, adjusted $R^2 = .324$, $F(7,1606) = 111.36$, $p < .001$, CI = confidence interval; SE = standard error

Discussion

The findings addressed the study objective by identifying six statistically significant associations among the seven adolescent-reported factors entered in the model. Emotional distress, the modified SDQ composite, and SRDD were positively associated with QOL difficulties, whereas self-efficacy and perceived social support were negatively associated; the adjusted RSES coefficient was small and positive and was interpreted cautiously as possible suppression. Health behaviors were not significant after adjustment.

Emotional distress showed the strongest adjusted association with QOL difficulties. A one-standard-deviation increase in the DASS-21 modified raw summed score (approximately 10.6 points) corresponded to an approximately 4.8-point increase in the raw QOL difficulties. This quantifies the association on the study's retained raw scale but should not be interpreted as a clinical threshold or minimally important difference. The finding is broadly consistent with multinational research in Asian adolescents, in which psychological distress was strongly related to poorer quality of life.[17] It also accords with the stress-coping framework: sustained emotional distress may consume adaptive resources and constrain engagement with school, peers, and family roles.

Strengths and Difficulties as measured by the modified SDQ composite showed the second-largest positive standardized coefficient. The retained score combined all 25 SDQ items after reverse-orienting the prosocial items and therefore represents a broader behavioral and psychosocial composite rather than the standard 20-item total difficulties score. Its positive association with QOL difficulties is consistent with evidence that emotional, conduct, hyperactivity, and peer difficulties are linked to poorer functioning;[12,16] however, the nonstandard composite limits direct comparison with established SDQ norms and requires cautious interpretation. In practice, school health personnel should assess

the specific emotional, behavioral, peer, and prosocial domains rather than use this composite as a diagnostic indicator.

Sleep-related daytime dysfunction also predicted QOL difficulties. Although smaller in magnitude than the coefficient for emotional distress, the modified SDQ composite, and self-efficacy, this finding has potential practical relevance because daytime sleepiness is modified. Daytime sleepiness, difficulty getting out of bed in the morning, and a perceived need for more sleep have been negatively correlated with attention, mood, learning readiness, and participation in school activities.[5,6] Prior Thai research also reported relationships between sleep duration, screen-based behaviors, and behavioral problems among school-aged children in Bangkok,[7] suggesting that sleep-related vulnerabilities in this population are not isolated to a single sample. These symptoms can be screened through brief questions, with parents, teachers, and school health personnel collaborating to promote consistent sleep routines, sleep hygiene, and reduced late-night screen exposure.

Self-efficacy and perceived social support appeared to function as protective factors. Higher self-efficacy was independently associated with fewer quality-of-life difficulties, making it the strongest protective factor identified in this model. This finding is consistent with self-efficacy theory, which posits that perceived control over outcomes and confidence in one's ability to manage difficulties are key determinants of adaptive functioning during adolescence.[10] Students who felt more capable of handling problems may have been better able to cope with academic and social demands. Perceived social support also negatively predicted QOL difficulties. Although the effect was smaller, the finding is consistent with the stress-buffering hypothesis, which posits that psychosocial resources moderate the impact of stressors on well-being. Family, friends, and significant others may provide emotional reassurance, practical support, and a sense of belonging, all of which are important for adolescent well-being.[8]

Self-esteem (RSES score) should be interpreted with caution, as it may indicate a statistical suppression effect rather than a direct harmful effect of self-esteem. The self-esteem was scored so that higher scores reflect greater self-esteem, with negative reverse scores. In the bivariate analysis, self esteem was weakly and negatively associated with QOL difficulties. However, after controlling for other psychosocial and behavioral variables in the regression analysis, self esteem showed a small positive independent association with QOL difficulties. This pattern is consistent with statistical suppression,[18] in which the variance shared between self-esteem and other variables, such as self-efficacy, perceived social support, emotional distress, and the modified SDQ composite, alters the apparent direction of the unique self-esteem effect. Therefore, the unique variance in self-esteem should be interpreted within the broader multivariable psychosocial context and not taken to indicate a negative relationship between self-esteem and QOL difficulties. It should be noted that a suppression effect is distinct from harmful multicollinearity: the low VIF values (all < 2.0) indicate that the predictors were not so strongly collinear as to destabilize the model, while suppression can still arise from moderate, ordinary shared variance among predictors. The two findings are therefore complementary rather than contradictory.

In preliminary analyses, the tertiary-education groups had the lowest QOL difficulties, as indicated descriptively, but specific pairwise contrasts cannot be inferred from the retained output. Parental education was considered a contextual factor rather than a predictor in the final model because that model was specified to examine seven adolescent-reported, potentially modifiable factors. Future models should include parental education and other socioeconomic indicators as covariates and account for their missingness.

The findings of this secondary analysis should be situated within broader adolescent-health and methodological evidence. Broader adolescent health frameworks emphasize adolescence as a foundation for future health and well-being and support an integrated, multi-domain approach to assessment rather than a single-dimensional focus when working with young adolescents.[4,19,20] Evidence also indicates that inadequate sleep is linked with functional difficulties among adolescents,[21] and qualitative research suggests that adolescents themselves understand quality of life through everyday functioning, relationships, and overall well-being.[22] Taken together, these perspectives support the use of integrated school health assessment and intervention approaches that address sleep, emotional and behavioral health, and psychosocial resources together rather than focusing on a single risk factor. School health nurses might look for indicators of sleep-related daytime dysfunction, emotional distress, behavioral problems, and support and coping abilities in combination, with early identification linked to nursing interventions such as counseling, health promotion, parent-child communication, support of classroom activities, and referral to mental health professionals and/or pediatricians. From a methodological standpoint, complete-case analysis can introduce bias when data are not missing completely at random, and methods such as multiple imputation may be useful in future analyses when item-level data are available.[23]

The results of this study were consistent with previous adolescent research. A multinational survey of urban adolescents found that better emotional and behavioral functioning and self-esteem were associated with better quality of life, while daytime sleepiness was associated with poorer functioning.[17] In the present model, emotional distress had the strongest adjusted association, followed by the modified SDQ composite and self-efficacy; SRDD showed a smaller but potentially modifiable adjusted association. Evidence from sleep research and Thai school-aged samples likewise supports links between sleep-related problems and daily functioning.[5,7,21] The predictors explained about one-third of the outcome variance, consistent with quality of life as a multidimensional construct and suggesting that unmeasured family, peer, school, and behavioral factors account for much of the remainder.[22]

Furthermore, this study is consistent with school-based studies that examine the same psychosocial resources. In a cross-sectional study of 696 adolescents that also used the General Self-Efficacy Scale and the Rosenberg Self-Esteem Scale, higher self-efficacy and self-esteem were associated with better health-related quality of life, whereas higher stress was associated with poorer quality of life.[24] The present results converge with that evidence: emotional distress was the strongest correlate of quality-of-life difficulties, and general

self-efficacy was protective. Although self-esteem was associated with fewer quality-of-life difficulties at the bivariate level, consistent with the protective association reported in that study, its small positive coefficient in the adjusted model is better interpreted as a statistical suppression effect among intercorrelated psychosocial factors[18] rather than as evidence that higher self-esteem worsens quality of life. Interpreting the coefficient in this way reconciles the present model with the wider literature and avoids a misleading clinical conclusion.

Limitations

This study has several limitations. First, its cross-sectional design and reliance on secondary data preclude causal inference. Second, the grade-based cohort spanned early to middle adolescence (ages 9–16), limiting age-specific generalizability. Third, valid-case numbers varied, with complete-case regression retaining 1,614 of 3,155 records, raising potential selection bias. Fourth, QOL and emotional distress measures used modified raw scores (PedsQL, DASS-21, SDQ) rather than standard scoring, restricting comparability and clinical interpretation. Fifth, reliability was reported only for QOL_total, and measurement invariance across age and gender was not tested. Sixth, self-report data may have introduced recall bias, social desirability bias, and shared-method variance. Seventh, the dataset lacked key variables (e.g., socioeconomic status, school climate, peer victimization, physical activity, screen time). Finally, the Bangkok public-school sample may not generalize to private schools or other regions.

Recommendation

School health nurses can integrate brief screening for daytime sleepiness, mood, and quality of life into routine student health checkups. School-based health promotion should include sleep education, strengthening adolescents' skills in sleep knowledge, emotion regulation, peer interaction, problem-solving, and self-efficacy. At the policy level, annual assessments of student quality of life, combined with brief mental- and sleep-health screening, should be embedded in the school system.

Future research should clarify links between sleep dysfunction, psychosocial resources, emotional/behavioral problems, and quality of life among Thai adolescents. Analyses should use standardized scale scores, include broader socioeconomic indicators, and examine self-efficacy as a mediator between social support and quality of life. School-level factors such as climate, class size, and teacher support should also be considered.

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