

## SYSTEMATIC REVIEW

# Subjective Self-report Questionnaires for Assessing Insomnia Among Adolescents: A Review

Anggi Setyowati<sup>1</sup>, Noor Ridha Yanti<sup>2</sup>, Muhammad Masyhuri<sup>3</sup>

<sup>1</sup> Department of Fundamental Nursing, School of Nursing, Faculty of Medicine and Health Science, Universitas Lambung Mangkurat, 70714, Banjarbaru, Indonesia

<sup>2</sup> School of Public Health, Universitas Cahaya Bangsa, 70654, Banjar, Indonesia

<sup>3</sup> Master Student, Faculty of Economic and Business, Universitas Lambung Mangkurat, 70123, Banjarmasin, Indonesia

## ABSTRACT

**Aim:** This systematic review aimed to evaluate the psychometric properties of the self-reporting questionnaires used to assess insomnia in adolescents. **Design:** We also used a PRISMA flow diagram. **Data sources:** Three electronic databases were used, CINAHL, PubMed, and SCOPUS, to get original articles published from inception to December 2022. MeSH was used to control vocabulary. The keywords were adolescents OR teenagers OR youth AND tools OR scale OR questionnaire OR scale OR self-report OR survey AND insomnia OR (sleep initiation and maintenance disorders) AND validity OR reliability OR validation. A table was used to present the articles. **Review Methods:** We limited the articles to the English language, to original articles that had already been published, to adolescents, to full-text articles, to the use of a quantitative design, and to the subjective measures of insomnia using self-reporting. **Results:** We obtained 471 articles from three databases. We excluded articles based on the criteria and 51 eligible articles were obtained through full text screening. Finally, the total number of studies was 6 articles. There were several self-reporting questionnaires able to be used to assess insomnia, such as the Basic Scale on Insomnia Complaints and Quality of Sleep (BaSIQS), the Adolescent Insomnia Questionnaire (AIQ), the Insomnia Severity Index (ISI), the Athens Insomnia Scale (AIS), the Sleep Quality Index (SQI), and the Youth Self-Rating Insomnia Scale (YSIS). These questionnaires have adequate validity and reliability. **Conclusion and Impact:** These questionnaires can assist adolescents and health care providers in conducting initial screening and understanding insomnia symptoms. *Malaysian Journal of Medicine and Health Sciences* (2025) 21(4): 295-301. doi:10.47836/mjmhs.21.4.36

**Keywords:** Insomnia, Adolescents, Questionnaires, Validity, Reliability

## Corresponding Author:

Dr. Anggi Setyowati

Email: anggisetyo@ulm.ac.id

Tel : +625114773470

## INTRODUCTION

The sleep-wake pattern decreases among adolescents due to puberty (1). Using social media before bed time can delay sleep onset (2). Meanwhile, puberty is correlated with biological development, manifesting as sleep disturbances such as problems initiating sleep and sleep maintenance, a short sleep duration on weekdays, and a high prevalence of insomnia. One of the most prevalent sleep disturbances among adolescents was insomnia (3). A previous study mentioned that 18.5% of adolescents reported insomnia based on the DSM-5 criteria (1), and that 62% of adolescents reported a sleep duration < 8 hours on nights (4). In Indonesia, 53.3% of adolescents reported having insomnia (5).

Insomnia disorder refers to difficulty falling asleep, maintaining sleep, and finding it hard to wake up in the early morning (3). It also has an impact during the daytime such as decreased attention. These symptoms occur at least three times a week and over at least a three month period. Nursing has also helped result in diagnoses regarding sleep, especially insomnia. Insomnia in relation to nursing refers to an inability to initiate or maintain sleep which impairs functioning (domain 4, class1, 00095). The characteristics of insomnia based on the nursing diagnosis include altered attention, mood, early wakening, expressed dissatisfaction with their quality of life, sleep, forgetfulness, the need for frequent naps during the day, impaired health status, increased absenteeism, accidents, insufficient physical endurance, and a nonrestorative sleep-wake cycle. It is also mentioned that the population most at risk for suffering from insomnia is adolescents (6).

Insomnia has an effect on physical and mental

health problems, and results in a decrease in school performance among adolescents (7). Insomnia has an effect on mental health problems such as anxiety and elevated suicidal ideation, meanwhile, adolescents with insomnia have also self-reported as having poor health (7, 8) and obesity (9). Due to these effects, insomnia has become a public health burden and an underreported problem (9).

Understanding sleep problems, especially insomnia, can prevent negative effects on adolescent health. Self-reporting questionnaires can be used as tool for assessing insomnia among adolescents (10). Self-reporting questionnaires can also assist healthcare providers, especially nurses, when deciding on the nursing diagnosis (11). Healthcare providers can go on to implement interventions to treat this problem. There are several self-reporting questionnaires used for screening insomnia, such as the Insomnia Severity Index (ISI) and the Athens Insomnia Scale (AIS) (12, 13), and these both have adequate psychometric validity and reliability. However, these studies are the only reporting tool for screening insomnia for the general population. The aim of this study was to evaluate the psychometric properties of the self-reporting questionnaires used to assess insomnia in adolescents as a systematic review. Table I defines the term in relation to sleep components (4, 14, 15), assisting the reader in understanding the terms used in the self-reporting questionnaires.

**Table I: Sleep Definitions**

Term	Definition
Sleep onset latency	The time it takes to reach REM Sleep <sup>13</sup>
Sleep quality	Satisfaction with the sleep experience, easy to-sleep initiation, sleep maintenance, sleep quantity, refresh after awakening <sup>13</sup>
Sleep depth	Sleep characterized by synchronized wave activity (Slow Wave Sleep) <sup>13</sup>
Sleep impairment	Sleep disorders like insomnia, restless leg syndrome, narcolepsy, and sleep apnoea <sup>2</sup>
Sleep maintenance	Inability to maintain sleep <sup>13</sup>
Sleep satisfaction	Subjective perception of the quality of sleep and it has an effect on energy levels <sup>14</sup>
Sleep insufficiency	Sleep deprivation due to life events, such as side effect of medicine, diseases, mental health disorder, or sleep disturbance <sup>13</sup>

## MATERIALS AND METHODS

### Literature Search Strategy

This study used a systematic review design. The review followed the PRISMA guidelines (Preferred Reporting Item for Systematic Reviews and Meta-analysis). Prisma provides guidelines for reporting and evaluating systematic reviews (16). We followed the previous study to guide our own (17), especially when deciding on the vocabulary used in the search strategies. Three electronic databases were used in this study, Scopus, CINAHL, and PubMed, to get original articles from inception through to December 2022. MeSH (medical subject headings) was used to control the vocabulary for the search strategy. The final terms used were adolescents OR teenagers OR youth AND tools OR scale OR questionnaire OR scale OR self-report OR survey AND insomnia OR (sleep initiation and maintenance disorders) AND validity OR reliability OR validation.

### Inclusion criteria

We limited the articles to those written in English, original articles that had already been published, where the participants were adolescents (10-19 years old, as defined by world health organization/WHO)), and full-text article. We also include the quantitative design, and subjective measures of insomnia using self-reported.

### Data Extraction and Quality Assessment

Two independents screened the articles obtained from the databases, followed by measuring the quality assessment of the final articles. The methodology of the articles was assessed using the evidence-based assessment proposed by Holmbeck et al. (18). Each article was classified into well-established assessment (at least two peer reviews to investigate the articles, sufficient tools or instruments used, and the statistics are present), approaching a well-established assessment (at least two peer reviews to investigate the articles, sufficient tools or instruments, and no statistics are present) and a promising assessment (only one peer review to investigate the article, sufficient tools or instruments, and no statistics are present) (Table II). All of the articles are in the well-established category.

**Table II: Quality Assessment**

	Tool	Well-established assessment			Approaching well-established assessment			Promising assessment		
		I	II	III	I	II	III	I	II	III
Allen Gomes et al., 2015	Basic Scale on Insomnia Complaints and Quality of Sleep (BaSIQS)	v	v	v						
Andreucci et al., 2020	the Adolescent Insomnia Questionnaire (AIQ)	v	v	v						
Bromberg et al., 2020	the Adolescent Insomnia Questionnaire (AIQ)	v	v	v						
Chahoud et al., 2017	Insomnia Severity Index (ISI)	v	v	v						
Chung et al., 2011	Insomnia Severity Index (ISI)	v	v	v						
	Athens Insomnia Scale (AIS)	v	v	v						
	Sleep Quality Index (SQI)	v	v	v						
Liu et al., 2019	Youth Self-Rating Insomnia Scale (YSIS)	v	v	v						

**RESULTS**

Figure I depicts the flowchart of article selection based on the PRISMA guidelines. From the three databases selected, we obtained the initial 471 articles (CINAHL: 89 articles, PubMed: 274 articles, and Scopus: 108

articles). The total number of duplicate articles were 84. Then we screened based on titles and abstracts, and the total was 387 articles. We excluded articles based on the study criteria and 51 eligible article were screened using the full text. Finally, the total number of studies included was 6 articles (Table III).

**Table III: Summary of Self-Report Questionnaires Used in Adolescents**

Author and Year	Tool	Tool detail	Reliability	Validity	Use in Adolescents	Weakness	Country
Allen Gomes A, 2015 <sup>18</sup>	Basic Scale on Insomnia complaints and Quality of Sleep (BaSIQS)	It had seven items to assess difficulties with sleep onset and maintenance, also subjective sleep quality and deep sleep in the past month	Cronbach alpha 0.73 Test-retest reliability > 0.8	Coefficient correlation with PSQI (r = 0.65)	N= 5042 higher education students	This paper did not control psychiatric or other medical problem	Portugal
Andreucci A, 2020 <sup>19</sup>	Adolescent Insomnia Questionnaire (AIQ)	13-item self-report to measure insomnia symptoms. It has three domains, that was sleep onset, sleep dissatisfaction and disorder, and maintenance of sleep	Cronbach alpha: 0.88	Convergent validity r= 0.86 , p < 0.001	N= 185 Mean age:+ 16 years old	CFA was not performed	Danish, Denmark
Bromberg MH, 2020 <sup>20</sup>	Adolescent Insomnia Questionnaire (AIQ)	13-item	Cronbach alpha: 0.91	Convergent validity p < 0.001	N: 315 youth 11-18 years	Only healthy adolescents	USA
Chahoud M , 2017 <sup>21</sup>	Insomnia severity index (ISI)	The ISI has seven-item self-report questionnaire to assess insomnia, such as symptoms, severity, and the effect of insomnia	The English version of the ISI, α = 0.90. French version α =0.70. ICC > 0.9	-	Age between 14-19 years old	-	Lebanon
Chung, 2011 <sup>22</sup>	Insomnia Severity Index (ISI), Athens Insomnia Scale (AIS) and Sleep Quality Index (SQI)	ISI has 7 items to assess subjective insomnia symptoms AIS is 8 items self-report questionnaire SQI is consisting 8 items	The Cronbach's alpha of ISI, AIS and SQI were 0.83, 0.81 and 0.65, respectively	There was relationship between ISI, AIS and SQI scores	N= 1516 Age 12-19 years old	No measure sensitivity	China
Liu X, 2019 <sup>23</sup>	Youth Self-Rating Insomnia Scale (YSIS)	It consists of 8 questions in term of insomnia symptoms waking up too early, or consequences in the daytime during past month	Cronbach's alpha was 0.80.	YSIS score was related with night sleep duration (r = - 0.325), daytime sleepiness score (r = 0.667), and total score of anxiety or depression (r = 0.451) (all p < 0.001).	N= 11,836 adolescents	-	China

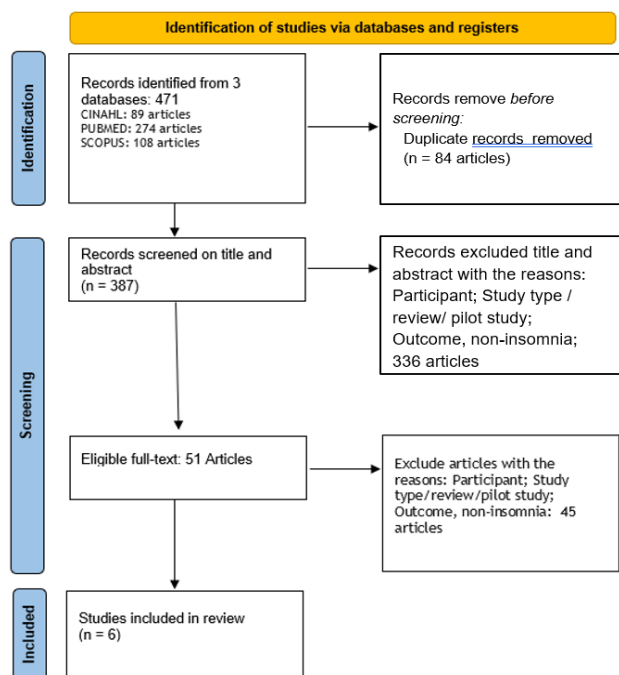


Figure 1: Flowchart of Study Selection

**Measures**

**Basic Scale on Insomnia Complaints and Quality of Sleep (BaSIQS):**

The Basic Scale on Insomnia Complaints and Quality of Sleep (BaSIQS) was created to measure sleep onset, sleep maintenance, and sleep quality during the past month. It is a short scale and very easy to use to screen for insomnia among higher education students. It consists of 7 items and involves a 4-point scale (0-4), except for the last two items. The total score is 28, and a higher score indicates poorer sleep quality. The Cronbach’s alpha of this tool was more than 0.7, and the test-retest reliability was also more than 0.8. The structural analysis was satisfactory for two factors, and for the single factor solution. Regarding validity, the total score for BaSIQS was significantly correlated with PSQI ( $r = 0.652$ ). The BaSIQS for adolescents was provided in Portuguese (19).

**The Adolescent Insomnia Questionnaire (AIQ)**

The Adolescent Insomnia Questionnaire (AIQ) is a tool for identifying insomnia symptoms among adolescents. It is 13 item self-reporting questionnaire and has three domains, sleep onset, sleep maintenance, and sleep impairment. This tool uses a 0 - 4 score with a total score between 0 - 52, and there are four reversed items. A higher score indicates severe insomnia symptoms. The Cronbach’s alpha of this questionnaire was 0.88 and 0.91, and had good convergent validity with the total score ( $p < 0.001$ ,  $r = 0.86$ ). Test-retest reliability was satisfactory ( $ICC = 0.89$ ). EFA (Exploratory Factor Analysis) showed a three-model solution. This tool was provided in the English and Danish languages (20, 21).

**The Insomnia Severity Index (ISI)**

The Insomnia Severity Index (ISI) has 7 items. It is a self-reporting questionnaire used to measure the symptoms, severity, and impact of insomnia during the previous month. It uses a 5 item Likert scale, and the questionnaire assesses falling asleep, staying asleep, early morning readiness, sleep satisfaction, interference, noticeability, and distress. The scores of the ISI range from 0 to 28. The interpretation of ISI 0-7 refers to no insomnia, 8-14 refers to subthreshold insomnia, 15-21 refers to moderate insomnia, and 21-28 refers to severe clinical insomnia. The cut-off score is  $\geq 9$ . ISI has an excellent internal consistency (Cronbach’s alpha= 0.90) (22) and  $ICC > 0.9$  (23). There were correlations found between the ISI, AIS and SQI scores.

**Athens Insomnia Scale (AIS)**

The Athens Insomnia Scale (AIS) consists of 8 items. It is a self-reporting questionnaire for assessing insomnia based on ICD-10. Each item is scored from 0-3 (0= no problem at all to 3+ very serious problem). The cut-off for AIS is  $\geq 7$ . Five items measure difficulty with falling asleep, awake during the night, waking up too early, total sleep time, and overall quality of sleep. The Cronbach’s alpha of this tool was 0.81 and validity was measured using the correlation between the AIS score, sleep-wake habit questionnaire and clinical interviews. This tool for screening insomnia in adolescents was provided in the Chinese language (23).

**Sleep Quality Index (SQI)**

The Sleep Quality Index (SQI) consists of 8 items for reporting difficulty falling asleep, waking up and sleep disturbance during the night, being awake too early, and insomnia using the categories of not at all, < 3 days/week, and 3-7 days/week. Time for falling asleep was divided into  $\leq 10$  minutes, 11-30 minutes, and > 30 minutes. Frequency for hypnotic use was divided into no, occasionally, and at least once a week. Morning tiredness was divided into very alert, don’t know, and very tired. The total score range of SQI is 0-16 and a higher score indicates poor sleep disturbance. The Cronbach’s alpha of this tool was 0.81 and validity was measured using the correlation between the SQI score and a sleep-wake habit questionnaire and clinical interviews. It was provided in the Chinese language (24).

**Youth Self-Rating Insomnia Scale (YSIS)**

The Youth Self-Rating Insomnia Scale (YSIS) is an 8 item self-reporting tool for assessing insomnia symptoms, sleep quality, and daytime functioning, and has two domains, specifically insomnia symptoms and daytime functioning. Each item in this questionnaire used a 5-point scale, with a total score between 8-40. Cronbach’s alpha was 0.80. The YSIS final score was related to duration of night sleep ( $r = - 0.325$ ), daytime

sleepiness score ( $r = 0.667$ ), and the score for anxiety/depression ( $r = 0.451$ ) (all  $p < 0.001$ ). It was provided in the Chinese language (25).

## DISCUSSION

Screening for insomnia among adolescents is needed to prevent negative effects, as well as to recognize and treat this problem (26). This systematic review aimed to evaluate the psychometric properties of the main self-reporting questionnaires currently used to assess insomnia in adolescents. It is expected that adolescents can recognize the symptoms of insomnia using the questionnaire, so then they can contact their healthcare provider to solve the problem. These self-reporting questionnaire also can help healthcare providers conduct the rapid screening of a large population and receive reliable data (27).

The Basic Scale on Insomnia Complaints and Quality of Sleep (BaSIQS) has adequate reliability and validity when it comes to assessing insomnia complaints among higher education students. This tool is brief and easy to use (19). This tool measures the time taken to fall asleep, sleep onset difficulty, night awakening, early morning awakening, problem awakening, sleep quality and sleep depth. This study did not have a cut-off score to interpret insomnia among adolescents. This makes it pretty hard to determine diagnostic accuracy based on the total score.

The Adolescent Insomnia Questionnaire (AIQ) has good psychometrics with which to measure insomnia symptoms among adolescents (20, 21). The AIQ has three domains: sleep onset, sleep dissatisfaction and impairments, and sleep maintenance. It can be used by adolescents aged 11-19 (20). AIQ also can be used for adolescents with chronic pain, with a cut-off score of 15. A cut-off score of more than 15 is considered to confirm insomnia (21).

The Insomnia Severity Index (ISI) can be used to assess insomnia among adolescents aged between 14-19 years old. The scale is brief, has a total of 7 items, and is easy to use. The scale also has good psychometrics. However, they used the previous cut-off score to assist clinical decisions (22). Another study mentioned that ISI can be used to assess insomnia among adolescents aged 12-19 years old. In this study, a total score of  $ISI \geq 9$  indicates insomnia (24). Furthermore, this study also conducts psychometry involving other self-reporting questionnaires used to assess insomnia among adolescents, specifically the Athens Insomnia Scale (AIS) and Sleep Quality Index (SQI). These two scales are brief, consisting of 8 items for each questionnaire. This study has strength, in that the cut-off scores for AIS and SQI of  $\geq 7$  and  $\geq 5$  indicate insomnia (24).

The Youth Self-Rating Insomnia Scale (YSIS) is a tool for

screening for insomnia among adolescents. It has two domains, daytime distress and insomnia symptoms. YSIS is brief tool and had good psychometrics in Indonesia. This study also examined the ROC, where a total score of  $< 22$  is considered normal, 22-25 mild insomnia, 26-29 moderate insomnia, and  $\geq 30$  severe insomnia. This tool only can be used by healthy adolescents (25).

## CONCLUSION

Sleep is important for adolescents. Adolescents who do not get enough sleep have a higher risk of obesity, diabetes, accidents, mental health problems and an attention deficit (28). In this study, several self-reporting questionnaires were examined that can be used to recognize and assess sleep problems among adolescents, especially insomnia, specifically the Basic Scale on Insomnia Complaints and Quality of Sleep (BaSIQS), the Adolescent Insomnia Questionnaire (AIQ), the Insomnia Severity Index (ISI), the Athens Insomnia Scale (AIS), the Sleep Quality Index (SQI), and the Youth Self-Rating Insomnia Scale (YSIS). The reviewed questionnaires have good psychometric properties, with one study lacking a clear cut-off score for insomnia. These tools can assist healthcare providers in screening for insomnia symptoms among adolescents. Several limitations were considered in this review. There was one study assessing insomnia among adolescents with chronic pain (21), while the others assessed insomnia among health adolescents. Further studies are needed to assess insomnia among adolescents in a clinical setting. In addition, one study did not provide a cut-off score for insomnia (19). A cut-off score is needed to assist the clinical decision. Additional studies, such as determining the diagnostic accuracy of these tools, are needed so then healthcare providers and nurses can select the most appropriate tool for screening for insomnia. Beside these limitations, the self-reporting questionnaires in this study can be used to report insomnia among adolescents.

## ACKNOWLEDGEMENT

We thank to Universitas Lambung Mangkurat for their support in this study.

## REFERENCES

1. Hysing M, Pallesen S, Stormark KM, Lundervold AJ, Sivertsen B. Sleep patterns and insomnia among adolescents: a population-based study. *Journal of sleep research*. 2013;22(5):549-56.<https://doi.org/10.1111/jsr.12055>.
2. Çelebioğlu A, Aytekin Özdemir A, Küçükoğlu S, Ayran G. The effect of Internet addiction on sleep quality in adolescents. *Journal of Child and Adolescent Psychiatric Nursing*. 2020;33(4):221-8.
3. American Psychiatric Association D, Association AP. *Diagnostic and statistical manual of mental disorders: DSM-5: American psychiatric association*

- Washington, DC; 2013.
4. Wheaton AG, Claussen AH. Short sleep duration among infants, children, and adolescents aged 4 months–17 years—United States, 2016–2018. *Morbidity and Mortality Weekly Report*. 2021;70(38):1315. <https://doi.org/10.15585/mmwr.mm7038a1>.
  5. Nursalam N, Octavia M, Tristiana RD, Efendi F, editors. Association between insomnia and social network site use in Indonesian adolescents. *Nursing forum*; 2019: Wiley Online Library.
  6. Ackley BJ, Ladwig GB, Makic MBF, Martinez-Kratz MR, Zanotti M. *Nursing Diagnosis Handbook, Revised Reprint with 2021-2023 NANDA-IO Updates-E-Book*: Elsevier Health Sciences; 2021.
  7. Hedin G, Norell-Clarke A, Hagell P, Tunnesen H, Westergren A, Garmy P. Insomnia in relation to academic performance, self-reported health, physical activity, and substance use among adolescents. *International journal of environmental research and public health*. 2020;17(17):6433. <https://doi.org/10.3390/ijerph17176433>
  8. Chan NY, Zhang J, Tsang CC, Li AM, Chan JWY, Wing YK, et al. The associations of insomnia symptoms and chronotype with daytime sleepiness, mood symptoms and suicide risk in adolescents. *Sleep medicine*. 2020;74:124-31. <https://doi.org/10.1016/j.sleep.2020.05.035>.
  9. Filip I, Tidman M, Saheba N, Bennett H, Wick B, Rouse N, et al. Public health burden of sleep disorders: underreported problem. *Journal of Public Health*. 2017;25:243-8. <https://doi.org/10.1007/s10389-016-0781-0>.
  10. Moore SA, Widales-Benitez O, Carnazzo KW, Kim EK, Moffa K, Dowdy E. Conducting universal complete mental health screening via student self-report. *Contemporary School Psychology*. 2015;19:253-67. <https://psycnet.apa.org/doi/10.1007/s40688-015-0062-x>.
  11. Zimmerman M, Mattia JI. A self-report scale to help make psychiatric diagnoses: the Psychiatric Diagnostic Screening Questionnaire. *Archives of general psychiatry*. 2001;58(8):787-94. <https://doi.org/10.1001/archpsyc.58.8.787>
  12. Chiu H-Y, Chang L-Y, Hsieh Y-J, Tsai P-S. A meta-analysis of diagnostic accuracy of three screening tools for insomnia. *Journal of psychosomatic research*. 2016;87:85-92. <https://doi.org/10.1016/j.jpsychores.2016.06.010>.
  13. Manzar MD, Jahrami HA, Bahammam AS. Structural validity of the Insomnia Severity Index: A systematic review and meta-analysis. *Sleep medicine reviews*. 2021;60:101531. <https://doi.org/10.1016/j.smrv.2021.101531>.
  14. Medicine NLo. [Available from: <https://www.ncbi.nlm.nih.gov/mesh>].
  15. Pacheco D. Sleep Satisfaction and Energy Levels 2022 [Available from: <https://www.sleepfoundation.org/sleep-hygiene/sleep-satisfaction-and-energy-levels>].
  16. Subirana M, Sol6 I, Garcia JM, Gich I, Urrutia G. A nursing qualitative systematic review required MEDLINE and CINAHL for study identification. *Journal of clinical epidemiology*. 2005;58(1):20-5. <https://doi.org/10.1016/j.jclinepi.2004.06.001>.
  17. Erwin AM, Bashore L. Subjective sleep measures in children: self-report. *Frontiers in pediatrics*. 2017;5:22. <https://doi.org/10.3389/fped.2017.00022>.
  18. Holmbeck GN, Thill AW, Bachanas P, Garber J, Miller KB, Abad M, et al. Evidence-based assessment in pediatric psychology: Measures of psychosocial adjustment and psychopathology. *Journal of Pediatric Psychology*. 2008;33(9):958-80. <https://doi.org/10.1093/jpepsy/jsm059>.
  19. Allen Gomes A, Ruivo Marques D, Meia-Via AM, Meia-Via M, Tavares J, Fernandes da Silva C, et al. Basic Scale on Insomnia complaints and Quality of Sleep (BaSIQS): reliability, initial validity and normative scores in higher education students. *Chronobiology international*. 2015;32(3):428-40. <https://doi.org/10.3109/07420528.2014.986681>
  20. Andreucci A, Lund Straszek C, Skovdal Rathleff M, Guldhammer C, de la Vega R, Palermo TM. Translation, validity and reliability of the Danish version of the Adolescent Insomnia Questionnaire. *F1000Research*. 2020;9:1029. doi: 10.12688/f1000research.25832.4.
  21. Bromberg MH, de la Vega R, Law EF, Zhou C, Palermo TM. Development and Validation of the Adolescent Insomnia Questionnaire. *Journal of Pediatric Psychology*. 2020;45(1):61-71. <https://doi.org/10.1093/jpepsy/jsz073>
  22. Chahoud M, Chahine R, Salameh P, Sauleau EA. Reliability, factor analysis and internal consistency calculation of the Insomnia Severity Index (ISI) in French and in English among Lebanese adolescents. *eNeurologicalSci*. 2017;7:9-14. <https://doi.org/10.1016/j.ensci.2017.03.003>
  23. Wong ML, Lau KNT, Espie CA, Luik AI, Kyle SD, Lau EYY. Psychometric properties of the Sleep Condition Indicator and Insomnia Severity Index in the evaluation of insomnia disorder. *Sleep Medicine*. 2017;33:76-81. <https://doi.org/10.1016/j.sleep.2016.05.019>
  24. Chung KF, Kan KK, Yeung WF. Assessing insomnia in adolescents: comparison of Insomnia Severity Index, Athens Insomnia Scale and Sleep Quality Index. *Sleep Med*. 2011;12(5):463-70. <https://doi.org/10.1016/j.sleep.2010.09.019>.
  25. Liu X, Yang Y, Liu ZZ, Luo Y, Fan F, Jia CX. Psychometric properties of Youth Self-Rating Insomnia Scale (YSIS) in Chinese adolescents. *Sleep and Biological Rhythms*. 2019;17(3):339-48. <https://doi.org/10.1016/j.sleep.2010.09.019>
  26. de Zambotti M, Goldstone A, Colrain IM, Baker FC. Insomnia disorder in adolescence: diagnosis,

- impact, and treatment. *Sleep medicine reviews*. 2018;39:12-24.<https://doi.org/10.1016/j.smr.2017.06.009>.
27. Gagnon C, Bélanger L, Ivers H, Morin CM. Validation of the Insomnia Severity Index in primary care. *The Journal of the American Board of Family Medicine*. 2013;26(6):701-10.<https://doi.org/10.3122/jabfm.2013.06.130064>
28. Owens J, Group ASW, Adolescence Co, Au R, Carskadon M, Millman R, et al. Insufficient sleep in adolescents and young adults: an update on causes and consequences. *Pediatrics*. 2014;134(3):e921-e32.<https://doi.org/10.1542/peds.2014-1696>.