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Oluwatosin Eunice Olorunmoteni ,[1,2] F Xavier Gómez-Olivé,[3] Biliamin O Popoola,[4] Adesegun Olayiwola Fatusi ,[5,6] Karine Scheuermaier[2]

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[1]Department of Paediatrics and Child Health, Obafemi Awolowo University, Ile-Ife, Nigeria
[2]School of Physiology, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa
[3]Medical Research Council/Wits Rural Health and Health Transitions Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa
[4]University Library, University of Medical Sciences, Ondo, Nigeria
[5]Department of Community Medicine, University of Medical Sciences, Ondo, Nigeria
[6]Department of Community Health, Obafemi Awolowo University, Ile-Ife, Nigeria

Correspondence to
Dr Oluwatosin Eunice Olorunmoteni; doc_tosino@yahoo.com

ABSTRACT

Introduction Problematic sleep is a major threat to health and quality of life among adolescents. Hence, to provide directions for research and interventions, there is a need to examine the literature on adolescent sleep health in Africa. However, available studies on adolescent sleep health in Africa have not been properly mapped. Thus, this scoping review aims to investigate the extent and type of available evidence concerning sleep health among adolescents in Africa and to highlight the relationship of adolescent sleep health with adverse mental health outcomes and cardiometabolic risk factors. The review will further highlight areas of agreement and controversies on adolescent sleep health, and identify evidence gaps that require research attention across the continent.

Methods and analysis This scoping review will be conducted using Arksey and O'Malley's six-step procedure. Thus, we have prepared this protocol according to the framework for scoping reviews developed by the Joanna Briggs Institute. To identify eligible studies, we will search MEDLINE, Scopus, PsycINFO, AJOL, JSTOR, HINARI and Google Scholar. The review will include all published articles in English, French, Spanish, Portuguese and Italian languages on adolescent sleep health in Africa from the inception of the databases, while relevant information will be extracted from included studies using an adapted data extraction tool. The results will be presented using tables and charts as appropriate.

Ethics and dissemination The scoping review does not require ethical approval because the publications to be used for the review are publicly available and the study does not involve contact with humans or other animals as research participants. Furthermore, clinical records will not be used for the study. Upon completion, findings from the study will be disseminated through presentations at scientific meetings and publication in a relevant peer-reviewed journal.

Scoping review registration Open Science Framework (https://osf.io/5sjwq/).

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ By interrogating the association of adolescent sleep health with mental health and cardiometabolic risk (CMR) in the wide cultural and geographical context of Africa, the review will provide the needed evidence to elicit action for improved adolescent health in Africa.
⇒ The scoping review will capture studies published in the major languages spoken on the African continent to ensure inclusivity.
⇒ As a limitation, the review will not analyse the size of the effects of the relationship between adolescent sleep health, mental health and CMR factors.

INTRODUCTION

Sleep health is an important component of overall health. It was first defined in 2014 by Buysse[1] as 'a multidimensional pattern of sleep-wakefulness, adapted to individual, social, and environmental demands, that promotes physical and mental well-being'. Good sleep health is characterised by subjective satisfaction, appropriate timing, adequate duration, high efficiency and sustained alertness during waking hours.[1] Sleep health has since evolved as a concept that explains the role of sleep as a cause or determinant of adverse health outcomes and morbidity rather than just a consequence or symptom of ill health.[2–4] Furthermore, the understanding of the concept of sleep health is widening the focus of sleep medicine beyond seeing poor sleep as a cause of sleep disorders to identifying sleep health as a predictor of overall health.[1 5] Thus, sleep health has emerged as a holistic view of sleep and its multiple characteristics: duration, quality, alertness, timing and continuity.[4] Sleep variability or regularity is being considered as an additional characteristic.[4] While earlier studies have focused on the concept of sleep health as it relates to the adult population, there is growing evidence of its applicability to child and adolescent health.[4 5] Hence, it is important to investigate the available evidence on the sleep health of adolescents in Africa.

While poor sleep is widely recognised as an important cause of morbidity, research on the subject is lacking both in quantity and quality in Africa.[6 7] Studies in high-income countries (HICs) have associated short sleep duration (SD) with increased physical and behavioural problems.[4 8 9] Nevertheless, evidence on the role, extent and scope of the various aspects of sleep health characteristics such as SD,

sleep quality, sleep chronotype (SC) and bedtime variability (BV) of adolescents in Africa has not been well reviewed or synthesised. Thus, there is a need for a review to examine the available evidence on adolescent sleep health, and the determinants and possible outcomes for adolescent sleep health in Africa.

Furthermore, existing studies have highlighted racial and social disparities in sleep health.[10–12] Some disparities have been described among people living in urbanised communities when compared with dwellers of rural communities. This suggests that differences may exist in the sleep health dynamics of adolescents in Africa when compared with adolescents in other low/middle-income countries as well as those in HICs. Similarly, there may be similarities or differences in the sleep health of adolescents dwelling in the various regions of the African continent. The sleep characteristics of adolescents in sub-Saharan Africa may be different from that of their counterparts in North Africa. Conversely, the sleep characteristics of adolescents within the entire African continent may be similar due to similarities and overlap of cultures, including the nomadic culture which cuts across the countries in North and West Africa. Furthermore, there may be disparities in the sleep health of rural-dwelling versus urban-dwelling adolescents in Africa. Thus, a detailed review of existing studies on African adolescents' sleep patterns and the sleep problems among adolescents residing in all the regions of the continent may help understand the effects of culture, religion, natural light exposures and electricity on adolescent sleep health.

In addition, there is a need to collate the available evidence on the contributory factors and outcomes associated with poor sleep health. The social determinants of sleep problems in adolescents have been well described in HICs using various models, especially the socioecological model.[13–15] The leading factors identified by these studies were excessive screen use, early school start times, the burden of homework, caffeine use and parental influences.[16–18] However, the available studies on the social determinants of sleep health in Africa have not been well explored among the adolescent population.

Many studies of adolescent sleep are based on SD as the main sleep variable measured. Other variables such as BV, sleep quality and SC have not been well explored.[19 20] However, emerging evidence suggests that SC and BV may be more important measures of sleep health.[21–23] Thus, there is a need to synthesise the mechanisms by which other sleep health variables such as SC contribute to adolescent sleep problems. This will bring more understanding of the concept of sleep health as it relates to adolescent sleep, particularly in the context of Africa.

Aside from the sociodemographic variables, emerging pieces of evidence have shown links between cardiometabolic diseases and poor sleep.[23 24] This suggests a possible association between cardiometabolic risk (CMR) and sleep health. CMR refers to an increased predisposition to cardiovascular disease, diabetes and metabolic syndrome.[25] The markers of CMR include cardiovascular risk factors such as weight–height ratio, body mass index, blood pressure, heart rate and measures of adiposity such as waist circumference, waist–hip ratio, body fat percentage and superficial fat thickness.[26 27] Others include fasting blood sugar, homeostatic model of insulin resistance, Matsuda index, lipid profile and inflammatory markers, among others.[26–28] These factors have been linked to various sleep parameters such as short or long SD, poor sleep quality, SC, bedtime irregularity and intra-individual variability (IIV) in bedtime.[13 21] Also, a high CMR in adolescence has been associated with a higher risk of cardiovascular disorders in adulthood, in particular young adulthood.[29]

However, inconsistencies in findings limit the generalisability of many suggested associations between sleep and CMR. The majority of these studies are cross-sectional in design and suggest a bidirectional relationship between poor sleep and CMR.[13 30] Furthermore, a gender disparity was observed between short SD and increased adiposity in females suggesting the need for an improved understanding of the mechanisms of the association.[28 31] The postulated mechanisms for the adverse effects of sleep disruption on CMR include inflammation, increased oxidative stress and endothelial dysfunction, elevated ghrelin and leptin levels, etc.[24 32 33] However, the types of sleep disruption associated with CMR are mainly those with altered circadian rhythms such as IIV or bedtime irregularity.[19 21 28] Thus, the collation of evidence from existing studies is needed to identify research gaps and suggest the direction for future research.

Studies in HICs suggest an association between poor sleep and adverse health outcomes.[31 34 35] In some African countries, there is an already worrisome increase in non-communicable diseases (NCDs).[36 37] This is mainly due to changes in lifestyles and the consequent increase in the risk factors for NCDs.[38] Sleep problems in adolescents, especially circadian misalignment or BV, have been linked with NCDs such as diabetes, cardiovascular diseases and cancers.[26 39 40] In addition, the presence of risk factors for the development of NCDs such as obesity has been linked to sleep problems.[26 27 31] Furthermore, obesity and poor sleep have been recognised as dual epidemics in adolescents worldwide.[26] However, the attention of researchers appears skewed towards obesity, while sleep problems and health outcomes have not been well explored.

The association between sleep health and the mental health of adolescents needs to be well studied. Sleep problems have been reported to result in adverse mental health outcomes such as anxiety, depression and behavioural disorders.[41–44] Many mental health disorders have sleep disturbances as a component of their symptomatology.[22] In addition, sleep problems can be an early pointer to the existence of a mental health disorder and sleep is a modifiable factor that can be targeted in mental health promotion programmes.[44] Furthermore, many of the medications used in treating mental health conditions have significant effects on sleep architecture and quality.[45] Thus, the relationship between sleep and mental health

is multidimensional. According to the WHO, 'mental health is more than the absence of mental health disorders'.[46] Mental health problems occur for one in seven adolescents.[47] Also, many of the determinants of mental health in adolescents contribute to sleep health.[44] These determinants would be worth exploring among African adolescents. Thus, this scoping review will include studies on the relationship between sleep health variables and the mental health of African adolescents.

After conducting preliminary searches on MEDLINE, the Cochrane Library of Systematic Reviews and Joanna Briggs Institute (JBI) Evidence Synthesis, no existing or underway systematic or scoping review on the topic was identified. Thus, the objective of this scoping review will be to assess the extent of the literature on adolescent sleep health in Africa. We present here the methods proposed for this scoping review.

Review questions

1. What are the key concepts, beliefs and cultural practices on sleep health in adolescents in Africa?
2. How have publications in adolescent sleep health evolved in Africa?
3. What are the geographical distribution, trends, sources and types of evidence available on adolescent sleep health in Africa?
4. What disparities exist in sleep health among rural versus urban-dwelling African adolescents?
5. What are the barriers and facilitators to good sleep health among rural and urban-dwelling adolescents in Africa?
6. What relationship exists between sleep health and mental health among adolescents in Africa?
7. What relationship exists between sleep health and CMR among adolescents in Africa?
8. What association exists between sleep health and school schedule among adolescents in Africa?
9. What interventions have been implemented for improving the sleep health of adolescents in Africa and how effective have they been?

METHODS AND ANALYSIS

Study design

This scoping review will be used to map out literature on the topic 'Adolescent sleep health in Africa'. We will be using the six-step procedure described by Arksey and O'Malley.[48] Thus, we have written this protocol according to the framework for scoping reviews developed by the JBI and the proposed scoping review will be conducted following the JBI methodology for scoping reviews.[49] The result will be presented following the Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR).[50]

Search strategy

The search strategy will aim to locate published studies. An initial limited search of MEDLINE (via PubMed) and CINAHL will be undertaken to identify articles on the topic. The text words identified in the titles and abstracts of relevant articles, and the index terms used to describe the articles will thereafter be used to develop a full search strategy for MEDLINE (PubMed), Scopus, CINAHL, AJOL, HINARI Summons and PsycINFO. The search strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. Aside from database searching, a reference snowballing approach will be deployed to identify more studies from the reference lists of screened and eligible articles. The initial search strategy developed for the study is presented in table 1.

Planned start and end dates

The study is planned to start in July 2023 and end by August 2023.

Inclusion criteria

The scoping review will include all published articles on the various sleep characteristics of adolescents, aged 10–19 years living in Africa from the inception of the databases. We will include peer-reviewed publications in English, French, Spanish, Portuguese, Italian and Arabic languages since the official languages in most African countries are anglophone, francophone, lusophone and Arabic. This will enable appropriate inclusion and evaluation of the evolution of publications over the years on adolescent sleep health in Africa.

Exclusion criteria

Studies published in languages other than English, French, Spanish, Portuguese, Italian and Arabic languages and those based on geographical location outside Africa will not be included in the review. Blogs, web pages, books, conference presentations and other grey literature will also be excluded from the review.

Types of sources

For comprehensive coverage of available evidence, the scoping review will include analytical observational studies (epidemiological studies) including prospective and retrospective cohort studies, case–control studies and analytical cross-sectional studies. In addition, the review will consider descriptive observational study designs including case series, individual case reports and descriptive cross-sectional studies for inclusion. In addition, studies from experimental and quasi-experimental study designs including randomised controlled trials, non-randomised controlled trials, before and after studies and interrupted time-series studies will be included. Qualitative studies that focus on qualitative data including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research and feminist research will be considered for inclusion. In addition, relevant systematic reviews that meet our inclusion criteria will also be for inclusion in the review. Only studies available in the full text will be included in the review.

Table 1 Initial search strategy for MEDLINE (via PubMed)

	Search strategy
#1	Sleep[Mesh] OR "Sleep quality"[Mesh] OR "Circadian rhythm"[Mesh] OR "Sleep hygiene"[Mesh] OR "Sleep duration"[tw] OR "sleep chronotype*"[tw] OR "Bedtime variabilit*"[tw] OR "Sleep pattern*"[tw] OR "Total sleep time"[tw] OR "Sleep efficienc*"[tw] OR "Sleep sufficienc*"[tw] OR "Sleep habit*"[tw] OR sleep[tw] OR "Sleep Deprivation"[Mesh] OR "Sleep Deprivation/complications"[Mesh] OR "Sleep Initiation and Maintenance Disorders"[Mesh] OR "Sleep Wake Disorders"[Mesh] OR "Disorders of Excessive Somnolence"[Mesh] OR Parasomnias[Mesh] OR "Sleep disorder*"[tw] OR "Sleep insufficienc*"[tw] OR "Sleep difficult*"[tw] OR Insomnia[tw] OR Hypersomnia[tw] OR "Excessive daytime sleepiness"[tw] OR "Sleep-related movement disorder*"[tw] OR "Sleep-related breathing disorder*"[tw] OR "Sleep apnoea"[tw] OR "Sleep apnea"[tw] OR "Obstructive sleep apnoea"[tw] OR "Obstructive sleep apnea"[tw] OR "Daytime sleepiness"[tw] OR "sleep deprivation"[tw]
#2	Adolescent[Mesh] OR Youth[tw] OR "Young people"[tw] OR Teenager*[tw] OR adolescent[tw]
#3	"Africa, Western"[Mesh] OR "Africa, Southern"[Mesh] OR "Africa south of the Sahara"[MeSH] OR "Africa, Eastern"[Mesh] OR "Africa, central"[MeSH] OR "Africa, Northern"[Mesh] OR Cameroon[tiab] OR "Central African Republic"[tiab] OR Chad[tiab] OR Congo[tiab] OR "Democratic Republic of the Congo"[tiab] OR "Equatorial Guinea"[tiab] OR Gabon[tiab] OR "Sao Tome and Principe"[tiab] OR Burundi[tw] OR Djibouti[tiab] OR Eritrea[tiab] OR Ethiopia[tiab] OR Kenya[tiab] OR Rwanda[tw] OR Somalia[tiab] OR "South Sudan"[tiab] OR Sudan[tiab] OR Tanzania[tiab] OR Uganda[tiab] OR Angola[tiab] OR Botswana[tiab] OR Eswatini[tiab] OR Lesotho[tiab] OR Malawi[tiab] OR Mozambique[tiab] OR Namibia[tiab] OR "South Africa"[tiab] OR Zambia[tiab] OR Zimbabwe[tiab] OR Benin[tiab] OR "Burkina Faso"[tiab] OR "Cabo Verde"[tiab] OR "Cote d'Ivoire"[tiab] OR Gambia[tiab] OR Ghana[tiab] OR Guinea[tiab] OR Guinea-Bissau[tiab] OR Liberia[tiab] OR Mali[tiab] OR Mauritania[tiab] OR Niger[tiab] OR Nigeria[tiab] OR Senegal[tiab] OR "Sierra Leone"[tiab] OR Togo[tiab] OR Algeria[tiab] OR Egypt[tiab] OR Libya[tiab] OR Morocco[tiab] OR Tunisia[tiab] OR "cape verde"[tiab]
#4	#1 AND #2 AND #3

Study/source of evidence selection

Following the search, all identified citations will be collated and uploaded into the Mendeley citation management software for deduplication. Following this, titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion and exclusion criteria for the review. The full text of selected citations will be assessed in detail against the inclusion criteria by two or more independent reviewers. Reasons for the exclusion of studies whose full text does not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion, or with an additional reviewer. The results of the search and the study inclusion process will be reported in full in the final scoping review and presented in a PRISMA-ScR[50] flow diagram (figure 1).

Patient and public involvement

None.

Data extraction

Data will be extracted from studies included in the scoping review by two independent reviewers using a data extraction tool developed by the team (table 2), adapted from a previous scoping review on adolescent reproductive health in Africa.[51] The data extracted will include specific details about the participants, concept, context, study methods and key findings relevant to the review questions. A draft extraction form will be provided in the report of the scoping review. The draft data extraction tool will be modified and revised as necessary during the process of extracting data from each included evidence source. Modifications will be detailed in the scoping review. Any disagreements that arise between the reviewers will be resolved through discussion or with an additional reviewer. Where required, authors of papers will be contacted to request missing or additional data.

Data analysis and presentation

We intend to map available evidence on adolescent sleep health in Africa. For this, we will characterise sources of evidence through the descriptive presentation of the yearly publication rates of adolescent sleep studies included in the scoping review and the countries of publication of the studies included in the review. Furthermore, extracted data from included publications will be presented according to the study design and sleep themes investigated by performing a basic qualitative content analysis of the publications. By using the thematic content analysis, pertinent qualitative data (texts) extracted from all studies included in the review will be synthesised and descriptively presented under themes that address the review questions.

Specifically, the review will use the three phases of qualitative content analysis described by Pollock *et al*.[52] In the preparation phase, the deductive approach will be used to map the data to established frameworks (sleep quality, SD, presence of sleep disorders, sleep as a comorbid condition with mental health) within the literature. The second phase, the organising phase, will involve open coding to allocate concepts or characteristics in the mapped data into overall categories. Thereafter, we will organise the categories of data into themes, based on the

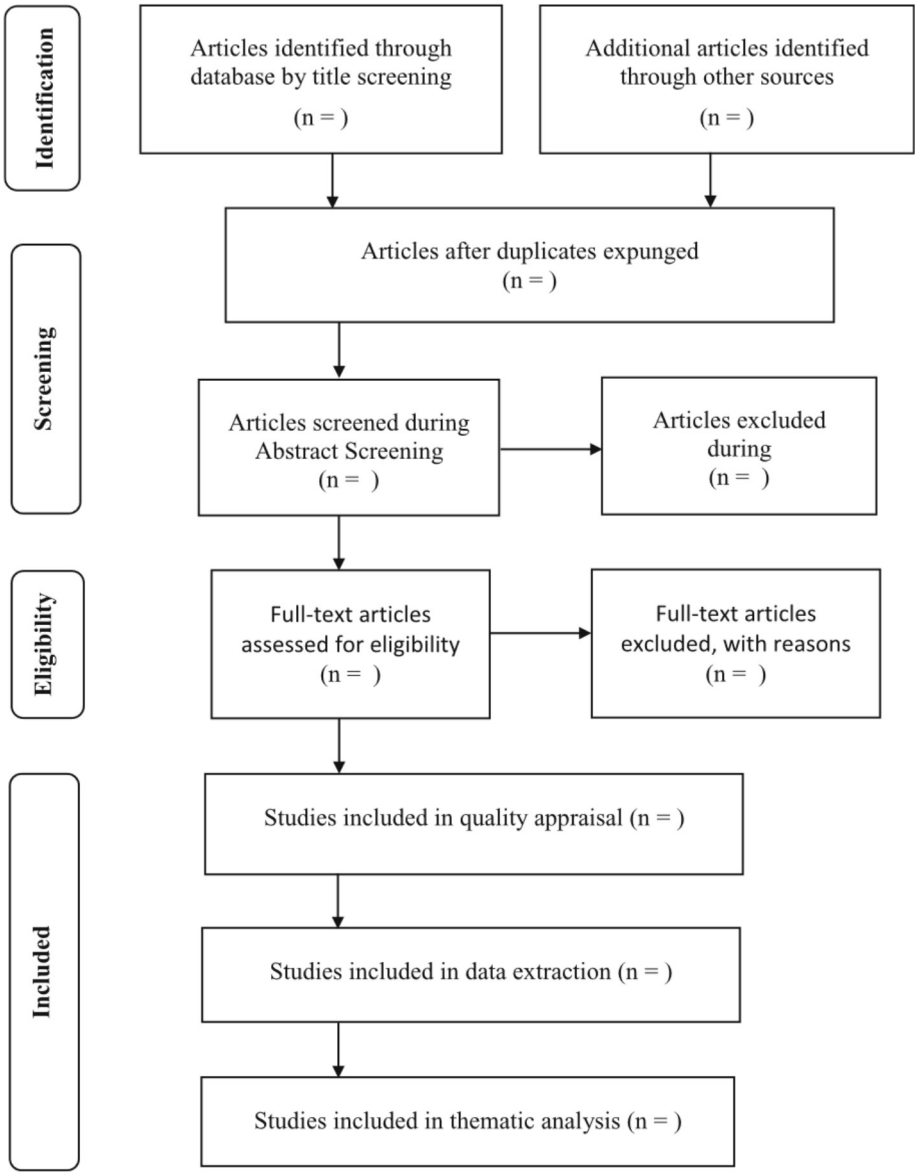


Figure 1 Flow chart.[50] The PRISMA-ScR flow diagram shown will be used to illustrate the processes involved in conducting this scoping review. These processes are (1) identification: to state the number of articles identified and the respective sources. The number of the duplicates found and removed will also be provided; (2) screening: the total number of articles screened will be provided here; (3) eligibility: the details of the number of full-text articles assessed for eligibility, the number of eligible studies and the number of studies that were excluded; (4) included: this section provided the number of studies included following quality appraisal, data extraction and thematic analysis, respectively. PRISMA-ScR, Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review.

review questions, to draw appropriate conclusions from the findings. For these steps, we will use the NVivo V.12 software. Using the NVivo software, the primary author will chart the results obtained from the publications and identify the main themes, while other authors will give feedback and review the synthesised results. These results will include themes and conclusions relating to adolescent sleep in Africa, rural versus urban disparities, the association between sleep and CMR and the association between sleep and mental health. The final results will be validated by the last author who is a specialist in sleep research and the third author who is a librarian. We will conduct the validation of sources using a test set of pre-identified relevant publications that should be captured using the database search. Following the first database search, we will check the identified publications based on our predetermined strategy to ascertain the comprehensiveness of the search. We will use the information obtained to make the appropriate changes to the search strategy if needed. In the reporting phase, the bibliographical characteristics of studies included in the review will be presented through the use of tables and charts. These tables and charts will describe the publication year, country of publication, authorship information, study design and settings, funders, sample size and other available relevant information about the articles. Visual

Table 2 Data extraction tool (adapted from a scoping review by Ajayi *et al*[51])

Main category	Subcategory	Description
Author Lead author		Indicate where the lead author is based (we will determine if a lead author is African or non-African by the institutional affiliation of the author)
Funder(s)		Indicate the funder (eg, Africa, European, USA, other North America)
Title		
]Journal		
Year of publication		
Aim/objectives		Describe the stated aim and objectives of the study
Year of research		
The country where the study was conducted		Indicate the country(ies) where the study was conducted
Study setting		Specify the location of study sites (eg, district(s))
Subregion where the study was conducted		Indicate the subregion study was conducted
Type of study		Indicate the study type (eg, primary research, secondary analysis, review, commentary, document analysis or discourse analysis)
Type of source		Indicate the type of publication (eg, journal article, book chapter, report, thesis)
Is the study an intervention study or focusing on describing the problem		Indicate whether the study described a problem or examine the effect of an intervention
Thematic focus	If describing a problem	Identify the area of focus (eg, sleep pattern, sleep duration, sleep quality, sleep hygiene/habits, sleep apnoea, other sleep problems, sleep chronotype, risk and protective factors, association with CMR factors, association with other health outcomes)
	If an intervention study	Describe the nature of the intervention
Methodology		
	Study design	Specify the study design adopted (eg, cross-sectional design, case study, prestudy, post-study design, longitudinal study, mixed methods, randomised controlled trial, qualitative study, review study)
	Population	Describe the characteristics of the target population
	Sampling strategy	Describe how sampling was done if applicable
	Data collection	Specify the methods of data collection
	Outcome measures	Indicate the outcome measures for quantitative studies
	Data analysis	Indicate method of data analysis
Results		
	Reported outcomes	Indicate the prevalence reported Highlight the determinants reported
	Key findings	Summarise the key findings
Conclusion		Highlight the main conclusion of the study
Limitations		Describe the study limitations

CMR, cardiometabolic risk.

presentation tools such as word clouds, tree graphs and waffle charts will also be used in presenting the results as appropriate. The key findings and gaps will thereafter be presented in a narrative summary within the text of the review.

ETHICS AND DISSEMINATION

The scoping review does not require ethical approval because the publications to be used for the review are publicly available and the study does not involve contact with humans or other animals as research participants.

Furthermore, clinical records will not be used for the study. Upon completion, findings from the study will be disseminated through presentations at scientific meetings and publication in a relevant peer-reviewed journal.

Twitter Biliamin O Popoola @bilspop

Contributors OEO, FXG-O, AF and KS conceived the idea and design for the study. OEO drafted the paper. OEO, KS and BOP developed the protocol and prepared the tables and figures. OEO, FXG-O, AF, BOP and KS all participated in the revision of the manuscript before submission. All authors have seen and given final approval to the final text.

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Disclaimer The statements made and views expressed are solely the responsibility of the fellow.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

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ORCID iDs
Oluwatosin Eunice Olorunmoteni http://orcid.org/0000-0001-8561-9918
Adesegun Olayiwola Fatusi http://orcid.org/0000-0002-3893-8024

REFERENCES

1 Buysse DJ. Sleep health: can we define it? does it matter *Sleep* 2014;37:9–17.
2 Hale L, Emanuele E, James S. Recent updates in the social and environmental determinants of sleep health. *Curr Sleep Med Rep* 2015;1:212–7.
3 Master L, Nye RT, Lee S, *et al*. Bidirectional, daily temporal associations between sleep and physical activity in adolescents. *Sci Rep* 2019;9:7732.
4 Hale L, Troxel W, Buysse DJ. Sleep health: an opportunity for public health to address health equity. *Annu Rev Public Health* 2020;41:81–99.
5 Matricciani L, Paquet C, Galland B, *et al*. Children ' s sleep and health: A meta-review. *Sleep Med Rev* 2019;46:136–50.
6 Balogun FM, Alohan AO, Orimadegun AE. Self-reported sleep pattern, quality, and problems among schooling adolescents in southwestern Nigeria. *Sleep Med* 2017;30:245–50.
7 Maduabuchi JC, Obu HA, Chukwu BF, *et al*. Sleep pattern and practice among adolescents school children in Nigerian secondary schools. *Pan Afr Med J* 2014;19:313:313.:.
8 Seo SH, Shim YS. n.d. Association of sleep duration with obesity and Cardiometabolic risk factors in children and adolescents: A population-based study. *Sci Rep*;9.
9 Yeo SC, Jos AM, Erwin C, *et al*. Associations of sleep duration on school nights with self-rated health, overweight, and depression symptoms in adolescents: problems and possible solutions. *Sleep Med* 2019;60:96–108.
10 Ahn S, Lobo JM, Logan JG, *et al*. A Scoping review of racial/ethnic disparities in sleep. *Sleep Med* 2021;81:169–79.
11 Williams NJ, Grandner MA, Snipes SA, *et al*. Racial/ethnic disparities in sleep health and health care: importance of the Sociocultural context. *Sleep Health* 2015;1:28–35.
12 Jackson CL, Powell-Wiley TM, Gaston SA, *et al*. Racial/ethnic disparities in sleep health and potential interventions among women in the United States. *Journal of Women's Health* 2020;29:435–42.
13 Siengsukon CF. The link between social determinants of health, sleep, and cardiovascular disease. *Cardiopulm Phys Ther J* 2020;31:5–10.
14 Gruber R, Somerville G, Paquin S, *et al*. Determinants of sleep behavior in adolescents: A pilot study. *Sleep Health* 2017;3:157–62.
15 Dimitriou D, Le Cornu Knight F, Milton P. The role of environmental factors on sleep patterns and school performance in adolescents. *Front Psychol* 2015;6:1717:1717.:.
16 Bartel K. Protective and risk factors for adolescent sleep health. *Sleep Med Rev* 2017;21:72–85.
17 Martin A, Pugmire J, Wells V, *et al*. Systematic literature review of the relationship between adolescents' screen time, sleep and mental health. *Heal Soc Care* 2020:1–91.
18 Calamaro CJ, Mason TBA, Ratcliffe SJ. Adolescents living the 24/7 lifestyle: effects of caffeine and technology on sleep duration and daytime functioning. *Pediatrics* 2009;123:e1005–10.
19 Faust L, Feldman K, Mattingly SM, *et al*. Deviations from normal Bedtimes are associated with short-term increases in resting heart rate. *NPJ Digit Med* 2020;3:39:39.:.
20 Krietsch KN, Chardon ML, Beebe DW, *et al*. Sleep and weight-related factors in youth: A systematic review of recent studies. *Sleep Med Rev* 2019;46:87–96.
21 Becker SP, Sidol CA, Van Dyk TR, *et al*. Intraindividual variability of sleep/wake patterns in relation to child and adolescent functioning: A systematic review. *Sleep Med Rev* 2017;34:94–121.
22 Van Dyk TR, Becker SP, Byars KC. Rates of mental health symptoms and associations with self-reported sleep quality and sleep hygiene in adolescents presenting for insomnia treatment. *J Clin Sleep Med* 2019;15:1433–42.
23 Lo K, Keung V, Cheung C, *et al*. Associations between sleep pattern and quality and cardiovascular risk factors among Macao school students. *Child Obes* 2019;15:387–96.
24 Tobaldini E, Fiorelli EM, Solbiati M, *et al*. Short sleep duration and Cardiometabolic risk: from pathophysiology to clinical evidence. *Nat Rev Cardiol* 2019;16:213–24.
25 Després J, Cartier A, Côté M, *et al*. The concept of Cardiometabolic risk: bridging the fields of Diabetology and cardiology. *Ann Med* 2008;40:514–23.
26 Gohil A, Hannon TS. Poor sleep and obesity: concurrent epidemics in adolescent youth. *Front Endocrinol (Lausanne)* 2018;9:364.
27 Quist JS, Sjödin A, Chaput J-P, *et al*. Sleep and Cardiometabolic risk in children and adolescents. *Sleep Med Rev* 2016;29:76–100.
28 Cespedes Feliciano EM, Rifas-Shiman SL, Quante M, *et al*. Chronotype, social jet lag, and Cardiometabolic risk factors in early adolescence. *JAMA Pediatr* 2019;173:1049.
29 Quinn RC, Campisi SC, McCrindle BW, *et al*. Adolescent Cardiometabolic risk scores: A Scoping review. *Nutr Metab Cardiovasc Dis* 2022;32:2669–76.
30 Bruce ES, Lunt L, McDonagh JE. Sleep in adolescents and young adults. *Clin Med (Lond)* 2017;17:424–8.
31 Fatima Y, Doi SAR, Mamun AA. Longitudinal impact of sleep on overweight and obesity in children and adolescents: a systematic review and bias-adjusted meta-analysis. *Obes Rev* 2015;16:137–49.
32 Medic G, Wille M, Hemels ME. Short- and long-term health consequences of sleep disruption. *Nat Sci Sleep* 2017;9:151–61.
33 Koo YS, Song J-Y, Joo E-Y, *et al*. Outdoor artificial light at night, obesity, and sleep health: cross-sectional analysis in the Koges study. *Chronobiol Int* 2016;33:301–14.
34 Owens J. Adolescent sleep working group and Committe on adolescence. insufficient sleep in adolescents and young adults: an update on causes and consequences. *Pediatrics* 2014;134:e921–32.
35 Kosticova M, Husarova D, Dankulincova Z. Difficulties in getting to sleep and their association with emotional and behavioural problems in adolescents: does the sleeping duration influence this Association? *Int J Environ Res Public Health* 2020;17:1691.
36 WHO. World health organization - Noncommunicable diseases (NCD). *Country Profiles* 2018.
37 Ekpenyong CE, Udokang NE, Akpan EE, *et al*. Non-communicable diseases and risk factors evaluation in sub-Saharan Africa: the Nigerian experience. *EJSD* 2012;1:249.
38 Olorunmoteni OE, Fatusi AO, Komolafe MA, *et al*. Sleep pattern, Socioenvironmental factors, and use of electronic devices among Nigerian school-attending adolescents. *Sleep Health* 2018;4:551–7.
39 Gupta N, Maranda L, Gupta R. Differences in self-reported weekend catch up sleep between children and adolescents with and without primary hypertension. *Clin Hypertens* 2018;24:7:7.:.

40 Monzon A, McDonough R, Meltzer LJ, *et al*. Sleep and type 1 diabetes in children and adolescents: proposed theoretical model and clinical implications. *Pediatr Diabetes* 2019;20:78–85.
41 Wiebe ST, Cassoff J, Gruber R. Sleep patterns and the risk for Unipolar depression: a review. *Nat Sci Sleep* 2012;4:63–71.
42 Zhang X, Dimitriou D, Halstead EJ. Sleep, anxiety, and academic performance: A study of adolescents from public high schools in China. *Front Psychol* 2021;12:678839.
43 Roberts RE, Duong HT. Prospective association between sleep deprivation and depression among adolescents _ sleep _ Oxford academic. *Sleep* 2014;37:239–44.
44 Short MA, Booth SA, Omar O, *et al*. The relationship between sleep duration and mood in adolescents: A systematic review and meta-analysis. *Sleep Med Rev* 2020;52:101311.
45 Doghramji K, Jangro WC. Adverse effects of psychotropic medications on sleep. *Psychiatr Clin North Am* 2016;39:487–502.
46 World health organization. Mental health: strengthening our response. Available: https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response [Accessed 18 Feb 2023].
47 World health organization. Adolescent mental health. Available: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health [Accessed 18 Feb 2023].
48 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology* 2005;8:19–32.
49 Peters MDJ, Godfrey CM, Mclnerney P, *et al*. *The Joanna Briggs Institute Reviewers'. Manual 2015: Methodology for JBI scoping reviews*. Joanne Briggs Inst, 2015: 1–24.
50 Tricco AC, Lillie E, Zarin W, *et al*. PRISMA extension for Scoping reviews (PRISMA-SCR): checklist and explanation. *Ann Intern Med* 2018;169:467–73.
51 Ajayi AI, Otukpa EO, Mwoka M, *et al*. Adolescent sexual and reproductive health research in sub-Saharan Africa: a Scoping review of substantive focus, research volume, geographic distribution and Africa-led inquiry. *BMJ Glob Health* 2021;6:e004129.
52 Pollock D, Peters MDJ, Khalil H, *et al*. Recommendations for the extraction, analysis, and presentation of results in Scoping reviews. *JBI Evid Synth* 2023;21:520–32.