# Title of the Study: "Prevalence and Correlates of Sleep Disorders in Children Aged 5–12 Years Admitted to a Tertiary Health Centre"

#### 3 Background

4 Sleep disorders in children adversely affect cognitive, behavioural, and physical health. Despite well-

5 documented impacts on quality of life, limited data exist on the prevalence of paediatric sleep

6 disorders and their correlates within hospitalized settings, especially among school-aged children.

#### 7 Objectives

- 8 To Determine the prevalence of sleep disorders in children aged 5–12 years and to identify common
- 9 disturbances, examine risk factors and assess the impact on daytime functioning and behaviour.

#### 10 Methodology

11 This cross-sectional study recruited children within 48 hours of admission to a tertiary health centre.

- 12 Caregivers completed structured questionnaires based on guidelines by Indian Academy of Paediatrics
- 13 capturing demographics, bedtime habits, sugar intake, family history, and daytime behaviours,
- 14 enabling the identification of sleep disturbances and potential correlates in hospitalized children.

#### 15 Results

- Among 200 participants (mean age 9.3±2.2 years, 53.5% male), 34% exhibited sleep disorders, most
  commonly sleep talking (41%), nighttime awakenings (34.5%), and snoring (16%). Risk factors
  included late bedtime (55.5% after 10 PM), screen time before sleep (48%), and sugar use (18.5%).
  Affected children reported higher irritability (38.5%), concentration difficulties (30%), academic
- 20 decline (14%), and school absenteeism (20%). Teeth grinding was notably more frequent in males
- 21 (8.41% vs. 2.2%, p=0.05), while other gender-based differences were not statistically significant.

#### 22 Conclusion:

- Sleep disorders were prevalent among children, with identifiable risk factors influencing daytime
   functioning. Targeted interventions addressing bedtime practices, screen time, and use of sugary foods
   may mitigate these disruptions and improve outcomes.
- Keywords: Sleep disorders, Children, Hospitalization, Risk factors, Daytime functioning, Paediatric
  care.

#### 28 1. Introduction and Background

Normal sleep architecture: NREM – Stage1- this is a transition stage where sleep usually begins, lasting for 1 to 7 minute along with lowered heart rate and respiration. Then comes the 2<sup>nd</sup> stage with deeper sleep, more difficult to arouse lasting for 10 to 15 minute initial cycle, longer with progressive cycles with further drop in hear rate, respiration and with no eye movements. Stages 3 and 4 has deepest sleep with highest arousal threshold where stage 3 lasts for few minutes while stage 4 lasts for 20 to 40 minutes. There is no significant distinguishing pattern in shift from stages 3 to 4. REM (Rapid Eye Movement) is associated with atonia and muscle paralysis with safe expression of dreams.

- 36 Stage 1 to stage 4 and then REM makes 1 cycle, the cycle repeats throughout the night. Total sleep is37 composed of 75-80% of NREM and 20-25% of REM.
- 38 NREM appears to be associated with learning and memory, helps in organizing important synapses39 whereas REM appears to be involved in memory consolidation and cognitive functioning.

Sleep is a fundamental biological process that plays a pivotal role in cognitive development, emotional regulation, and physical growth in children. Adequate and quality sleep is vital for optimal daytime functioning, which encompasses learning, behaviour, and overall well-being (1). However, sleep disorders remain underdiagnosed and undertreated in paediatric populations, often leading to adverse outcomes such as impaired academic performance, mood disturbances, and increased risk of obesity and cardiovascular issues (2) (3). The prevalence of childhood sleep disturbances is reported to range from 20% to 30% in community settings, with higher rates observed in clinical populations

47 due to comorbid conditions and environmental stressors (4).

Sleep disorders are characterized by abnormalities in quality, time and amount of the sleep. They are
 classified as per ICSD 3 (International classification of Sleep Disorders 3) into

- Insomnia
- Sleep-disordered breathing
- Central disorders of hypersomnolence
- Circadian rhythm sleep-wake disorders
- Parasomnias
- Sleep-related movement disorders.
- Insomnia is defined as a persistent difficulty with sleep initiation, duration or consolidation thatoccurs despite adequate opportunity and circumstances for sleep.
- 58 Sleep disordered breathing includes obstructive sleep apnoea which presents as snoring, laboured,
- 59 paradoxical or obstructed breathing during sleep with sleepiness, hyper activity, behavioural and
- 60 learning problems, confirmed with polysomnography. Commonly linked to adeno tonsillar
- 61 hypertrophy, obesity or positive family history.
- 62 Central disorder of hypersomnolence includes narcolepsy and Idiopathic Hypersomnia which are63 characterised by excessive daytime sleepiness in absence of other sleep disorders.
- 64 Circadian rhythm disorders include Delayed sleep phase syndrome wherein sleep schedule lags
- behind expected sleep schedule. Seen more commonly in teens. When child has difficulty falling
- asleep and waking up due to daytime event most likely school and not due to physiological
- 67 dysynchrony of circadian rhythm it is known as Motivational phase delay where underlying issue
- 68 causing distress must be targeted. Phase advance is when sleep schedule is earlier than
- 69 environmentally expected sleep schedule, less common than sleep delay.

- 70 Parasomnias are largely seen in children but seen to resolve spontaneous with age. NREM
- parasomnias include sleep walking, night terrors. REM parasomnias include nightmares and nocturnal
   enuresis.
- Within tertiary health centres, children are frequently admitted for acute and chronic illnesses, potentially exacerbating sleep problems. Disrupted routines, unfamiliar environments, and heightened parental anxiety can further compromise sleep quality and quantity (5). Additionally, factors such as irregular bedtime schedules, excessive screen time, and higher sugar intake contribute to sleep disturbances in school-aged children (6). Recognizing and managing these modifiable risk factors becomes crucial in preventing long-term complications, particularly as poor sleep has been linked to attention difficulties, learning disorders, and behavioural issues (7) (8).

B0 Despite growing evidence of the negative impact of paediatric sleep disorders, there remains a need for systematic research that quantifies their prevalence and identifies associated risk factors, particularly in hospitalized children. Understanding the magnitude and specific types of sleep disorders—such as bedtime resistance, frequent awakenings, and snoring—can inform clinical protocols aimed at improving sleep hygiene practices, both in hospital environments and upon discharge (9) (10).

86 In this context, the present study aims to investigate the prevalence of sleep disorders among children 87 aged 5–12 years admitted to a tertiary health centre, filling an important gap in current knowledge. By 88 exploring the correlates of these disturbances, including family history and sugar consumption, this 89 study seeks to elucidate the multifactorial nature of paediatric sleep issues. Furthermore, examining 90 the impact of disordered sleep on daytime functioning-such as academic performance and 91 behaviour—can shed light on the broader implications of inadequate sleep in this vulnerable 92 population. Findings from this research may guide the development of targeted interventions and 93 policy recommendations to enhance screening, early detection, and management of sleep disorders in 94 clinical settings.

#### 95 2. Aims and Objectives

96 Primary Objective: To determine the prevalence of sleep disorders among children aged 5–12 years
97 admitted to a tertiary health centre.

- 98 Secondary Objectives
- 99 1. To identify common types of sleep disturbances (e.g., bedtime resistance, frequent awakenings).
- 101 2. To explore associations between sleep-related issues and selected factors such as bedtime102 routines, family history, and sugar intake.
- 103 3. To assess the impact of these sleep disturbances on daytime functioning and behaviour.

104 3. Methodology

#### 105 3.1. Study Design

106 A cross-sectional design was employed. Children who met the age criteria (5–12 years) were 107 approached within the first 48 hours of admission to the paediatric ward. Caregivers were interviewed 108 using a structured questionnaire designed to capture a broad range of sleep-related behaviours and 109 problems.

#### 110 3.2. Study Setting

- 111 This study was conducted in the Paediatric Department of a tertiary health centre, where both acute
- 112 and chronic paediatric cases were managed.

#### 113 **3.3. Study Population**

#### 114 Inclusion Criteria

- 115 1. Children aged 5–12 years who are newly admitted to the paediatric ward.
- 116 2. Caregivers who provide written informed consent.

## 117 Exclusion Criteria

- 118 1. Children with known, previously diagnosed severe sleep disorders.
- 119 2. Critical care patients where routine sleep assessments are not feasible.
- 120 3. Children whose caregivers do not consent or are unable to complete the questionnaire.

#### 121 3.4. Sample Size

- Based on published literature, sleep disorders affect approximately 25% of school-aged children. This
  estimate draws from several key studies, including research by Bharti et al. (11) who reported a
  prevalence of 23.7% in a paediatric population. Among Indian children, the prevalence of individual
  sleep disorders was 39.4% in another recent study from Chennai(12)
- 126 For this prevalence study the required sample size was calculated using the following formula:  $n = 127 \quad Z^2_{(1-a/2)} \times p(1-p) / d^2$
- 128 Parameters:
- 129  $Z_{(1-a/2)} = 1.96$  (for  $\alpha = 5\%$ )
- p = expected prevalence (0.4)
- d = precision (0.07)

- 132 Calculation:  $n = (1.96)^2 \times 0.4(1-0.4) / (0.7)^2 n = 3.8416 \times 0.4 \times 0.6 / 0.049 n = 188.2$  rounded off to 133 189
- The minimum required sample size is 189 children. Adding a 5% buffer to account for potential nonresponse or incomplete data: Final recommended sample size = 200

#### 136 3.5. Sampling Technique

137 Consecutive sampling was used. All eligible children who met the inclusion criteria and whose
138 caregivers provided consent were enrolled until the desired sample size was reached. This approach
139 minimized selection bias and allowed a diverse range of clinical presentations to be included.

#### 140 **3.6. Data Collection Procedure**

141 Consent and Assent: Written informed consent was obtained from the primary caregiver. Where142 feasible, assent from the child was sought following institutional guidelines.

#### 143 Questionnaire Administration

144 A structured "sleep disorders in Children (5-12 years) Questionnaire" was administered by trained

- research personnel. The questionnaire was based on the "Guidelines for Normal Sleep and PhysicalActivity" by the Indian Academy of Paediatrics (IAP).(13)
- 147 The questionnaire explored bedtime routines, nighttime awakenings, parasomnia-like behaviours,148 daytime sleepiness, and related lifestyle factors.

#### 149 4. Data Analysis

150 All collected data were cleaned and analysed using SPSS (version 25). Descriptive statistics 151 (frequencies, percentages, means, and standard deviations) were used to summarize demographic 152 variables and major outcomes related to sleep. Bivariate analyses (e.g., Chi-square tests for 153 categorical variables, t-tests for continuous variables) were conducted to explore associations between 154 sleep disturbances and potential risk factors such as family history, bedtime habits, screen time, or 155 sugar intake. A significance level of p < 0.05 was adopted for hypothesis testing.

#### 156 5. Ethical Considerations

157 Ethical Approval: This protocol was submitted to the Institutional Ethics Committee (IEC) or an158 equivalent body for review and approval.

159 Informed Consent: Caregivers were fully informed regarding the study's purpose, procedures, and160 the voluntary nature of participation.

161 Confidentiality: All participant information was coded, and only de-identified data were used for
 162 analysis and reporting. Data access was restricted to authorized research personnel to maintain
 163 privacy.

- Potential Benefits and Risks: This study involves minimal risk, as it requires only a questionnaire based assessment. Early identification of sleep issues may lead to improved management strategies
   within the paediatric ward.
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#### **RESULTS AND OBSERVATIONS**

170 Table No 1: Prevalence of Sleep Disorder

Prevalence	Number	%
Child with Sleep Disorder	68	34
No Sleep Disorder	132	66



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- **173** The study revealed a 34% prevalence of sleep disorders among hospitalized children aged 5–12 years
- 174 (68 out of 200), while 66% (132 children) exhibited no sleep disturbances.
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176 Table No.2: Gender Distribution among Study Participants

Gender	Number	%
Male	107	53.5
Female	93	46.5
Total	200	100



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- The gender distribution of the study population showed a slight male predominance, with 53.5% (107)
- male and 46.5% (93) are female.

#### Table No.3: Age group Distribution among Study Participants

Age group	Number	%
<7	34	17
≥7	166	83
Mean±SD	9.3	±2.2

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The majority of the study population (83%) comprised children aged  $\geq$ 7 years (166 out of 200), while

17% (34 children) were younger than 7 years. The mean age of the participants was  $9.3 \pm 2.2$  years.

Residential area	Number	%
Urban	126	63
Rural	74	37
Education Level		
No formal		
Education	19	9.5
Primary	53	26.5
Secondary	29	14.5
Graduation and		
Above	99	49.5
Family History		
Yes	12	6
No	174	87
Not Sure	14	7

#### **188** Table No.4: Sociodemographic Characteristics and Family History of Sleep Disorders

189 The study population had a higher proportion of children from urban areas (63%) compared to rural

areas (37%). Regarding parental education, nearly half (49.5%) had completed graduation or higher,

while 26.5% had primary education, 14.5% had secondary education, and 9.5% had no formal

education. Family history of sleep disorders was reported in only 6% of cases, whereas 87% had no

such history, and 7% were uncertain.

#### 194 Table No.5: Child Sleep Patterns: Duration, Routine, and Disturbances

Child Sleep Routine		Number	%
	8:00-9:00 PM	9	4.5
Usual	9:00-10:00 PM	79	39.5
Bedtime	After 10:00 PM	111	55.5
	less than 7	5	2.5
Total	7–8 hours	36	18
Sleep	8–9 hours	93	46.5
hours	9–11 hours	66	33
Difficulty Falling Asleep		77	38.5
Child Wa	ke up at multiple time	69	34.5
Consistent Bed time Routine		176	88
Child experiences disturbances		50	25
Child C	onsume sugary food	37	18.5
Child ta	akes nap during day	64	32

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The majority of children (55.5%) had a bedtime after 10:00 PM, while 39.5% slept between 9:00– 10:00 PM, and only 4.5% went to bed before 9:00 PM. Regarding total sleep duration, 46.5% slept for 8–9 hours, while 33% had 9–11 hours of sleep. However, 38.5% reported difficulty falling asleep, and 34.5% experienced frequent nighttime awakenings. Despite 88% maintaining a consistent bedtime routine, 25% experienced sleep disturbances. Consumption of sugary foods was observed in 18.5% of children, and 32% took daytime naps, potentially influencing their nighttime sleep.

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## 204 Table No.6: Sleep-Associated Factors and Functional Implications

	Number	%
Parents Presence	65	32.5
TV/Mobile Device	96	48
Specific Toy	40	20
Resist going to Bed	72	36
Repeated Attention	68	34
Irritability/Mood Swings	77	38.5
Difficulty in concentrating	60	30
Poor Academic		
Performance	28	14
Missing School	40	20

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Among the studied children, 48% used TV or mobile devices before sleep, while 32.5% had parental

presence as a sleep-associated factor. Resistance to going to bed (36%) and repeated attention-seeking

208 (34%) were commonly observed behaviours. Symptoms associated with sleep disorders included

209 irritability/mood swings (38.5%) and difficulty concentrating (30%). Additionally, 14% had poor

academic performance, while 20% had school absenteeism.

## 211 Table No.7: Prevalence and Pattern of Various Sleep Disorders.

Sleep Disorder	Number	%
Nightmare	5	2.5
Sleep Talking	82	41
Screaming at Night	8	4
Teeth Grinding	11	5.5
Snoring	32	16
Sleepiness/Fatigue	60	30
Bedwetting	12	6
Sleepwalking	4	2

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- 214 Among the various sleep disorders observed in children, sleep talking was the most prevalent,
- 215 affecting 41% of the study population. Sleepiness and fatigue were reported in 30% of cases, followed 216 by snoring (16%) and bedwetting (6%). Other sleep disturbances included teeth grinding (5.5%),
- 217
- screaming at night (4%), nightmares (2.5%), and sleepwalking (2%).

#### 218 Table No.8: Parental Perspectives on Children's Sleep Patterns, Physical Activity, and Screen 219 Time

	Parents Questionnaire	Number	%
	Less than 1 Hour	32	16
Physical	1-2hours	133	66.5
Activity	More than 2 Hours	35	17.5
	Less than 1 Hour	34	17
Screen	1-2hours	116	58
Time	More then 2 Hours	50	25
	>1-2hours Stretching	106	53
Par	ents concern with child's sleep pattern	73	36.5
F	Parents consulted to specific doctors	7	3.5
Parents F	Perception that Child's Sleep Quality is poor	50	25

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221 Parental responses indicated that the majority of children (66.5%) engaged in 1-2 hours of physical 222 activity daily, while 16% had less than an hour of activity, and 17.5% exceeded 2 hours. Regarding 223 screen time, 58% had 1-2 hours of exposure, 25% had more than 2 hours, and 17% had less than an 224 hour. Notably, 53% of children experienced stretching sleep durations beyond 1-2 hours. Parental 225 concerns about their child's sleep patterns were reported in 36.5% of cases, while only 3.5% consulted 226 a doctor for sleep-related issues. Additionally, 25% of parents perceived their child's sleep quality as 227 poor.

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#### 230 Table No.9: Gender based Distribution of Sleep Disorders.

	Male(107)		Female(93)		
Sleep Disorder	Number	%	Number	%	р
Nightmare	2	1.87	3	3.2	0.52
Sleep Talking	50	46.73	32	34.4	0.078
Screaming at Night	6	5.61	2	2.2	0.22
Teeth Grinding	9	8.41	2	2.2	0.05
Bedwetting	7	6.54	5	5.4	0.76
Sleepwalking	2	1.87	2	2.2	0.84
Snoring	19	17.76	13	14.0	0.47
Sleepiness/Fatigue	33	30.84	27	29.0	0.78

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236 The Table showed variations in prevalence between males and females. Sleep talking was more 237 common in males (46.73%) compared to females (34.4%), with a p-value of 0.078. Screaming at 238 night was observed in 5.61% of males and 2.2% of females (p = 0.22). Teeth grinding was 239 significantly more frequent in males (8.41%) than in females (2.2%), with a p-value of 0.05, 240 indicating a notable gender difference. Bedwetting was reported in 6.54% of males and 5.4% of 241 females (p = 0.76), while sleepwalking was almost equally prevalent in both genders (1.87% in males 242 and 2.2% in females, p = 0.84). Snoring was observed in 17.76% of males and 14% of females (p = 0.84). 243 0.47). Sleepiness or fatigue affected 30.84% of males and 29% of females (p = 0.78). While some 244 sleep disorders, such as teeth grinding, were notably more prevalent in males, most conditions did not 245 show statistically significant gender-based differences.

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## 248 Table No. 10: Distribution of Sleep Disorder in Different age group

	<7 Year(n=34)		≥7 Year(n=166)		
Sleep Disorder	Number	%	Number	%	р
Nightmare	0	0.0	5	3.0	0.31
Sleep Talking	13	38.2	69	41.6	0.71
Screaming at Night	1	2.9	7	4.2	0.72
Teeth Grinding	1	2.9	10	6.0	0.47
Snoring	7	20.6	25	15.1	0.43
Sleepiness/Fatigue	9	26.5	51	30.7	0.72
Bedwetting	2	5.9	10	6.0	0.98
Sleepwalking	0	0.0	4	2.4	0.37



251 The prevalence of sleep disorders was analyzed in children younger than 7 years (n=34) and those 252 aged 7 years or older (n=166). Nightmare occurrences were absent in children under 7 years but were 253 reported in 3.0% of older children (p = 0.31). Sleep talking was observed in 38.2% of younger 254 children and 41.6% of older children (p = 0.71). Screaming at night occurred in 2.9% of younger 255 children and 4.2% of those aged 7 or older (p = 0.72). Teeth grinding was reported in 2.9% of children 256 under 7 and 6.0% of older children (p = 0.47). Snoring was more frequent in younger children 257 (20.6%) compared to 15.1% in older children (p = 0.43). Sleepiness or fatigue was reported in 26.5% 258 of younger children and 30.7% of older children (p = 0.72). Bedwetting was noted in 5.9% of children 259 under 7 and 6.0% of those aged 7 or older (p = 0.98). Sleepwalking was absent in younger children 260 but was observed in 2.4% of older children (p = 0.37). Overall, none of the differences between the 261 age groups were statistically significant.

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#### DISCUSSION

#### 264 Prevalence of Sleep Disorder

In this study, 34% of hospitalized children aged 5–12 years had sleep disorders, closely matching Raju et al. (14), (32.25%) and moderately lower than Malagi et al. (12), (39.35%). These rates exceed general population estimates (20–28%), as hospitalized children often experience comorbidities or stressors that worsen sleep disturbances. Similar global data from Owens et al. and Galland et al. underscore the heightened vulnerability in clinical settings and the importance of routine sleep screening in at-risk paediatric populations.

#### 271 Gender Distribution

- 272 Males comprised 53.5% of participants, closely mirroring other paediatric sleep studies (e.g., Alfakeh
- et al., (15) Gupta et al. (16)). The minimal disparity (about 53% males vs. 47% females) aligns with a
- 274 meta-analysis by Galland et al., (17) suggesting sex differences in childhood sleep disorders are
- 275 negligible. Minor variations in male predominance likely reflect methodological or cultural factors.
- 276 Collectively, the near-balanced distribution reinforces that sleep disorders are not strongly sex-specific
- 277 in prepubertal children

#### 278 Age Distribution

Participants ranged from 5 to 12 years (mean:  $9.3 \pm 2.2$  years), with 83% aged  $\geq$ 7 years. This focus on school-aged children aligns with Malagi et al. (12) but contrasts with studies (e.g., Alfakeh et al., (15) Kim et al. (18)) that included broader age spans. The older skew here may reflect the tertiary care context, where conditions such as asthma, epilepsy, and behavioural disorders frequently lead to hospitalization in middle childhood. These findings highlight varying age distributions across sleep research and underscore the importance of developmental factors in paediatric sleep issues.

#### 285 Prevalence of Specific Sleep Disturbances

- Sleep Talking (41%) emerged as the most common disturbance, higher than Gupta et al. (16),
  (20.9%) and Liu et al. (19) (16.5%) but comparable to Malagi et al. (12) (34.99%). Daytime
  Sleepiness/Fatigue (30%) aligned with Gupta et al. (16), (25.5%) yet exceeded Liu et al. (19),
  (4.25%), highlighting potential methodological differences in how symptoms are reported.
- 290 Snoring (16%) fell between Gupta et al. (16) (11.4%) and Kim et al. (18) (31.6%). Bruxism (5.5%) 291 was notably lower than in other studies (e.g., Malagi et al. (12) 17.12%), possibly due to 292 underdiagnosis in acute care. Nightmares (2.5%) and Night Terrors (4%) were less frequent 293 compared to Malagi et al. (12) or Liu et al., (19) perhaps reflecting higher age or stricter criteria. 294 Nocturnal Enuresis (6%) was also lower than Malagi et al. (12) (30.95%), likely due to an older 295 cohort, as enuresis commonly declines with age. **Sleepwalking** (2%) matched Gupta et al. (15) (3.2%) 296 but diverged from Liu et al. (19) (8.5%), underscoring differences in population or parental 297 awareness.

#### 298 Gender-Specific Prevalence of Sleep Disorders

Few disturbances showed significant sex variation. Sleep talking and snoring were slightly higher in males, consistent with some data (Kim et al. (18)) but often not reaching statistical significance. **Bruxism** demonstrated a significant male predilection in this study (8.4% vs. 2.2%), contrasting with others (Gupta et al. (16)). In contrast, **nocturnal enuresis**, **nightmares**, and **night terrors** showed no marked sex difference, mirroring findings from Kim et al. (18) and Gupta et al., (16) Overall, minor fluctuations in gender-specific prevalence reflect varying methodologies, cultural norms, and underlying comorbidities.

#### 306 Age-Specific Prevalence of Sleep Disorders

307 Snoring appeared slightly higher in younger children (20.6% in <7 years vs. 15.1% in ≥7 years),</li>
308 aligning with the notion that adeno tonsillar hypertrophy is more common in early childhood.
309 Parasomnias (e.g., nightmares, night terrors) were generally low in the present cohort and did not vary

310 sharply by age—possibly due to fewer preschoolers. **Bruxism** (2.9% in <7 years vs. 6.0% in  $\ge$ 7 years)

- 311 rose somewhat in older children, echoing other studies that note increased stress-related behaviours in
- **312** school-aged populations. (20)

313 Daytime Sleepiness/Fatigue was common across both age groups, suggesting that hospitalization and 314 illness can impair sleep quality at any developmental stage. Nocturnal Enuresis remained similar 315 across ages (about 6%), though broader research often shows a gradual decline with maturation. These 316 observations highlight distinct developmental trajectories for certain disorders—such as snoring or 317 parasomnias—and support the need for age-tailored sleep assessments in paediatric care.

#### 318 Limitations and Future Prospects

Although this study provides valuable insights, it has several limitations. Reliance on parent-reported
 data may introduce recall bias, and the use of subjective screening tools could miss subclinical sleep
 disturbances. Furthermore, the hospital-based sample restricts generalizability to community
 populations, and the cross-sectional design precludes establishing causality.

Moving forward, longitudinal research is recommended to clarify how paediatric sleep disorders evolve over time and how they impact long-term physical and mental health. Studies evaluating targeted interventions—such as behavioural therapies for stress-related sleep issues or surgical approaches for snoring—may offer more effective strategies to manage and prevent sleep disturbances in children.

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#### CONCLUSION

329 This study highlights a significant prevalence of sleep disorders among children aged 5-12 years 330 admitted to a tertiary health centre, with sleep talking, daytime sleepiness, and snoring being the most 331 common disturbances. The findings reveal strong associations between sleep issues and factors such 332 as irregular bedtime routines, family history, and sugar intake, emphasizing the multifactorial nature 333 of these disorders. Sleep disturbances were also found to negatively impact daytime functioning, 334 including academic performance and behaviour. These results underscore the importance of routine 335 screening and early intervention in clinical settings to address modifiable risk factors and improve 336 sleep health. Future research should focus on longitudinal studies to better understand the long-term 337 effects of sleep disorders and the effectiveness of targeted interventions in paediatric populations.

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385	Annexure : Parent's Questionnaire
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388	Section 1: Demographic and Background Information
389	1. Age of the child:
390	5–6 years 7–8 years 9–10 years 11–12 years
391	2. Gender:
392	• Male Female Other/prefer not to say (optional, based on your context)
393	3. Place of residence:
394	o Urban Rural
395	4. Parent/guardian's education level:
396	• No formal education Primary Secondary Graduate and above
397	5. Family history of sleep disorders (e.g., insomnia, sleep apnea) in first-degree relatives
398	(parents or siblings)?
399	• Yes No Not sure
400	Section 2: Sleep Patterns and Hygiene
401	Bedtime and Duration
402	6. What is the usual bedtime for your child?
403	• Before 8 PM 8:00–9:00 PM 9:00–10:00 PM After 10:00 PM

404	7. On most nights, how many total hours does your child sleep?
405	• Less than 7 hours 7–8 hours 8–9 hours 9–11 hours
406 407	Sleep Initiation and Maintenance- 8.In the past month, how often has your child had difficulty falling asleep?
408	$\circ$ Never Rarely (1–2 times in 4 weeks) Sometimes (1–2 times a week)
409	• Often (3–5 times a week) Always (nearly every night)
410	9. In the past month, how often has your child woken up multiple times at night?
411	• Never Rarely Sometimes Often Always
412	Pre-Bedtime Routine
413	10. Which activities does your child typically engage in during the hour before bedtime?
414	Watching TV/using devices     Reading or storytelling
415	Playing (active play)     Other (please specify):
416	11. How consistent has your child's bedtime routine been in the past month?
417	Never consistent     Rarely consistent     Sometimes consistent
418	Often consistent     Always consistent
419 420	12. How often does your child experience disturbances like noise or light in the sleeping environment?
421	• Never Rarely Sometimes Often Always
422 423	13. How often does your child consume caffeinated or sugary drinks within 2 hours before bedtime?
424	• Never Rarely Sometimes Often Always
425	Napping and Morning Feel
426	14. Does your child take naps during the day?
427	• No $\rightarrow$ Skip to Q15 Yes $\rightarrow$ If yes, how many hours per day on average?
428	15. In the past month, how often does your child wake up feeling refreshed?
429	• Never Rarely Sometimes Often
430	Section 3: Behavioral and Physical Sleep Problems

431	16.	In the past month, how often has your child shown the following during sleep or at
432		bedtime?
433		(Mark one frequency per item)
434		Symptom   Never   Rarely   Sometimes   Often   Always     : :
435		: :: ::   a. Nightmares       b. Sleepwalking        c. Sleep talking
436		d. Screaming at night       e. Teeth grinding       f. Bedwetting
437	17	In the past month, how often does your child rely on the following to fall asleen?
438	17.	(Select a frequency for each that applies)
439		Sleep Association   Never   Rarely   Sometimes   Often   Always
440		
441		c. Specific objects (toy etc.)
442	18.	In the past month, how often does your child resist going to bed (e.g., protesting,
443		stalling)?
444	•	Never Rarely Sometimes Often Always
445	19.	In the past month, how often does your child ask for repeated attention (e.g., extra
446		stories, drinks) before falling asleep?
117		Name Barshu Samatiman Office Almong
447	•	Never Karely Sometimes Often Always
448	20.	In the past month, how often have you noticed your child snoring?
449	•	Never Rarely Sometimes Often Always
450	21.	In the past month, how often has your child complained of leg discomfort or restlessness
451		at bedtime?
452	•	Never Rarely Sometimes Often Always
	-	
453	Section	a 4: Impact of Sleep Problems
454	22.	In the past month, how often has your child shown the following daytime symptoms?
455		Daytime Symptom   Never   Rarely   Sometimes   Often   Always
456		:: :: :: : a. Sleepiness or fatigue             b. Irritability or
457		mood swings         c. Difficulty concentrating         d. Poor academic performance
458	23	Has your child's sleep issues impacted their daily functioning or behavior in a noticeable
459	20.	way (e.g., missing school, conflicts with peers)?
460	•	Never Rarely Sometimes Often Always
461	•	Section 5: Physical Activity and Sedentary Behavior

462	24	. How many hours per day does your child engage in physical activity (moderate to
463		vigorous)?
464	•	Less than 1 hour1–2 hoursMore than 2 hours
465	25	. How much time does your child spend on screen-based entertainment daily (TV, phone,
466		gaming, etc.)?
467	•	Less than 1 hour1–2 hoursMore than 2 hours
468	26	. Does your child participate in structured physical activities (e.g., sports, dance, martial
469		arts)?
470	•	No Yes (please specify type/frequency if you wish):)
471	27	. How often does your child spend long periods (>1-2 hours at a stretch) being sedentary
472		(sitting or lying down, excluding sleep)?
473	•	Never Rarely Sometimes Often Always
474	Section	n 6: Parental Concerns and Observations
475	28	. Do you have concerns about your child's sleep patterns?
476	•	Never Rarely Sometimes Often Always
477	29	. Has your child ever consulted a doctor specifically for sleep-related problems?
478	•	Yes No
479	30	. Overall, how would you rate your child's current sleep quality?
480		• Excellent Good Fair Poor
481	Scorin	g Suggestions (Optional)
482	1.	Frequency-Based Items:
483		• Never = 0 points $Rarely = 1$ point $Sometimes = 2$ points $Often = 3$ points
484		$\circ$ Always = 4 points
485	2.	Positive vs. Negative Items: -For questions indicating a potential problem (e.g., difficulty
486		falling asleep), higher points = more severe/ more frequent problem.
487		• For healthy habits (e.g., waking up refreshed, consistent bedtime routine), you can
488		either reverse-score them (so that $Always = 0$ points, $Never = 4$ points) or track them
489		separately as protective factors.

- 490 3. Total Score:-You could sum all relevant problem-related items (difficulty initiating sleep,
  491 frequent awakenings, nightmares, snoring, etc.). Higher scores = greater risk or severity.
- 492 o Conversely, you can sum the "positive" items (consistent routine, feeling refreshed)
  493 to gauge overall sleep hygiene.

#### 494 4. Cutoffs:

0

495 496

497

If you plan to use cutoffs (e.g., mild vs. moderate vs. severe sleep problems), conduct a small pilot or refer to existing paediatricsleep questionnaires to determine meaningful thresholds.

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