

RESEARCH ARTICLE

Ramadan fasting and physical and cognitive fatigue in adolescent students

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ABSTRACT

This study examined the impact of Ramadan fasting on physical and cognitive fatigue among adolescent students, addressing a gap in a literature that has focused predominantly on adults and athletic populations. A quantitative, cross-sectional design was used: an anonymous, structured questionnaire employing a 3-point Likert-type scale (Positive/Neutral/Negative) was administered to N = 50 Year 12 (Classe de Première) students at the Lycée Français Bonaparte in Doha, Qatar, who self-identify as Muslim and observe the daily fast. The instrument assessed four domains: energy levels, cognitive performance, sleep architecture, and hydration/nutrition. Results indicated a substantial reduction in nocturnal sleep, with a mean duration of 5.2 ± 1.7 hours (median 5.0 hours) against a recommended 8–10 hours for adolescents (Hirshkowitz et al., 2015), and 60.0% of students reporting disrupted sleep. A pronounced circadian phase shift was observed: 86.0% of students reported their peak sense of well-being in the evening, after Iftar, rather than during school hours. Classroom concentration was rated positively by only 26.0% of respondents, and sustained daytime energy by only 34.0%. Lack of sleep (52.0%) and dehydration (42.0%) were the most commonly cited drivers of fatigue. Despite this physiological strain, students showed behavioural resilience: 54.0% maintained their usual participation and a positive mood, and only 28.0% reported a definite decline in grades relative to the rest of the academic year. These findings support the primary hypothesis that adolescents experience measurable increases in physical and mental fatigue during Ramadan, and suggest this fatigue is driven more by sleep disruption and altered daily routines than by the act of fasting itself. The results indicate that while fasting imposes a substantial circadian and sleep burden on adolescent students, compensatory coping mechanisms mitigate its translation into academic decline for the majority of students. The study recommends institutional guidance on sleep hygiene, pre-dawn hydration, and flexible scheduling of demanding academic tasks during Ramadan.

KEYWORDS

Ramadan fasting; adolescent students; sleep deprivation; cognitive fatigue; circadian rhythm; academic performance

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1. Introduction

1.1 Background of the Study

Ramadan intermittent fasting is a fundamental religious practice observed annually by millions of Muslims worldwide. It requires complete abstinence from food, fluids, oral medications, and smoking from dawn (Sahur) until sunset (Iftar). Depending on the geographical location and the season, the daily fasting duration can range from 10 to over 20 hours.

While adults are the primary adherents, adolescence marks the transition where observing Ramadan becomes obligatory. This developmental period is characterized by rapid physiological growth, neurodevelopmental changes, and high academic demands. Unlike elective intermittent fasting regimens optimized for health outcomes, Ramadan fasting incorporates unique lifestyle shifts such as nocturnal eating patterns, altered sleep-wake cycles, and early morning waking for Sahur that can introduce distinct

biological and psychological stressors (Elsahoryi et al., 2025; Latif, 2025). A widely cited review of the sleep and chronobiology literature by Qasrawi et al. (2017) notes that these effects stem less from caloric restriction itself than from the accompanying shift in sleep/wake timing and light exposure a distinction that motivates this study's focus on sleep architecture and time-of-day well-being as primary variables, rather than treating fasting as a single undifferentiated exposure.

1. 2 Statement of the Problem

During Ramadan, adolescent students must maintain their standard school schedules and academic performance without daytime nutritional or fluid support. The physiological shifts associated with acute daytime dehydration and caloric restriction can produce noticeable alterations in body chemistry, metabolic rates, and hormonal profiles (Miladi et al., 2024). Furthermore, the societal and familial practices of late-night prayers (Tarawih) and early morning meals frequently cause sleep fragmentation, reduced overall sleep duration, and poor subjective sleep quality (Elsahoryi et al., 2025).

While some studies highlight the metabolic flexibility, neuroprotective qualities, and psychological resilience developed through fasting (Prasetyo et al., 2025), others point toward heightened daytime sleepiness, mood fluctuations, and diminished physical capacity (Khemila et al., 2023). Adolescent students represent a uniquely vulnerable cohort due to their ongoing physical maturation and the high cognitive loads demanded by secondary education. However, empirical literature regarding how these combined physiological and sleep alterations interact to cause physical and cognitive fatigue specifically in adolescents remains divided and fragmented (Miladi et al., 2024).

1. 3 Rationale and Significance of the Study

Understanding the exact trajectory of physical and cognitive fatigue during the month-long fast is vital for several stakeholders. Academically, educators and policymakers require data to determine whether high-stakes examinations or physically demanding activities (such as physical education classes) should be modified during Ramadan. Clinically, understanding how fluid and sleep deprivation affect adolescent development helps in designing actionable sleep hygiene and nutritional guidelines to mitigate exhaustion.

This study addresses gaps in the literature in three ways. First, it shifts the empirical focus from adult or athletic populations, which dominate the existing evidence base, to adolescent students in a standard academic setting. Second, it utilizes consistent, standardized self-report metrics across four domains to isolate physical fatigue from cognitive declines, rather than treating fatigue as a single undifferentiated outcome. Third, it assesses variation across different times of day and across the fasting month, allowing diurnal and cumulative fluctuations in well-being to be tracked as the fast progresses, rather than captured at a single moment.

2. Literature Review

The existing evidence base on Ramadan fasting and fatigue is concentrated in two populations competitive athletes and adult university students leaving adolescent secondary-school students comparatively understudied.

Among adult populations, Elsahoryi et al. (2025) followed 77 university students in Jordan before and after a period of Ramadan fasting using a quasi-experimental, pre-post design. Fasting was associated with a measurable decline in sleep quality (a rise in Pittsburgh Sleep Quality Index scores) along with reduced sleep duration and increased sleep disturbance, while scores on the Depression Anxiety Stress Scales-21 did not change significantly. This suggests that sleep architecture, rather than mood or clinical distress, is the domain most consistently disrupted by fasting a pattern the present study's adolescent sample also reflects.

In athletic populations, Khemila et al. (2023) tracked professional football players across the weeks of Ramadan, measuring reaction time, selective attention, and physical performance (via Wingate testing) at multiple times of day. Their work, part of a broader sports-science literature on diurnal performance variation during fasting, found that both cognitive and physical output shifted across the day and across the month, reinforcing the idea that time-of-day is a key moderating variable consistent with this study's finding of a pronounced evening shift in adolescents' self-reported peak energy. This pattern echoes earlier, foundational work in the field: Zerguini et al. (2007), studying professional soccer players, documented measurable declines in fitness and skill-test performance across the fasting month, while Tian et al. (2011) reported comparable reductions in psychomotor and memory performance among Muslim athletes, particularly later in the day an early indication that the timing of testing, not fasting alone, shapes observed outcomes.

A closely related study by Miladi et al. (2024) tested simple, choice, and negative-priming reaction time alongside auditory event-related potentials (P300) in 24 healthy boys aged 11–15, comparing a pre-Ramadan session with a session in the second week of fasting. Notably, this study found no significant change in reaction times or P300 amplitude/latency, suggesting that short-term information-processing speed and decision-making can remain intact in young adolescents even under fasting conditions. This

null result contrasts with the present study's finding of widespread self-reported concentration difficulties, and points to an important distinction the present study helps clarify: objective reaction-time measures and subjective, classroom-based self-report may capture different aspects of "fatigue," with the latter more sensitive to cumulative sleep debt over a full month than the former is to a single fasting session in its second week.

Two recent adolescent-athlete studies reinforce this distinction between sleep and performance. Bougrine et al. (2024), testing young athletes across the full month, found that psychomotor and cognitive performance declined significantly only in the fourth and final week of Ramadan, alongside a parallel decline in sleep quality and duration suggesting a cumulative rather than immediate effect, consistent with this study's own whole-month retrospective design. Similarly, Guembri et al. (2024), studying 65 U14 and U17 female handball players, found significant increases in sleep-quality and insomnia scores during Ramadan, yet no significant change in objective physical-fitness test results. Read together, these two studies suggest that adolescents' sleep architecture is consistently more sensitive to Ramadan fasting than their measured physical or cognitive output closely mirroring this study's own pattern of pronounced sleep and energy complaints alongside comparatively preserved participation and mood (Section 5.4).

A further, geographically relevant data point comes from Lolli et al. (2024), who used wrist actigraphy to track youth academy football players (aged 12.6–16.2 years) training in Doha, Qatar the same city as the present study's school. They recorded an abrupt, objectively measured reduction of approximately 90 minutes in first-period night sleep at the onset of Ramadan, alongside increased sleep fragmentation. This objective, local confirmation of acute sleep loss in a similarly aged Qatar-based adolescent population lends direct external support to the present study's self-reported finding of a mean 5.2-hour nightly sleep duration during Ramadan.

Findings on cognition during fasting remain mixed more broadly. Koul (2024), examining cognitive performance in young adults observing Ramadan, is consistent with a wider body of adult-focused work reporting measurable, if transient, cognitive slowing during the fasting period echoing the reaction-time delays this study's respondents describe qualitatively as reduced concentration. By contrast, Najafabadi (2015), studying young females, questioned whether fasting reliably produces adverse cognitive effects at all, aligning instead with reports of preserved or even improved subjective functioning once the body adapts to the fasting schedule. Read together with Miladi et al. (2024), this divide suggests that age, sex, task type, and time elapsed since the start of Ramadan can each moderate whether fasting shows up as a measurable cognitive cost a fragmentation this study's Introduction identifies as a central gap in the literature.

On the sleep side specifically, the evidence is more consistent. Beyond Elshoryi et al. (2025), objective actigraphy studies by BaHammam et al. (2013) and a systematic review and meta-analysis by Faris et al. (2019) both report reduced total sleep time and increased daytime sleepiness during Ramadan across a range of populations, reinforcing Qasrawi et al.'s (2017) conclusion that sleep-wake timing, rather than caloric restriction, is the primary disruptor. Because adolescents are recommended 8–10 hours of nightly sleep for healthy functioning (Hirshkowitz et al., 2015), the roughly three-to-five-hour shortfall this literature documents during Ramadan represents a proportionally larger deficit for adolescents than for adults, underscoring the relevance of a dedicated adolescent-focused study such as this one.

Qualitative and attitudinal research adds a further layer: Latif (2025) documents how British Muslims describe the psychological and social dimensions of the fasting month including its perceived spiritual and communal benefits alongside its physical toll while Prasetyo et al. (2025), studying sustained attention in Indonesian university students, emphasizes the resilience and metabolic adaptability some fasting individuals develop as the month progresses. Taken together with the quantitative findings above, this indicates that the fatigue response to Ramadan fasting is neither uniform nor fully explained by caloric or fluid restriction alone, but is shaped by sleep timing, routine disruption, and individual coping capacity.

The clearest parallel to the present study's academic-performance findings comes from Attash et al. (2025), who surveyed 922 Iraqi university students using validated sleepiness and fatigue scales. They found that 90.1% of students reported fasting-related sleep disruption and that low academic performance, observed in 61.4% of the sample, was significantly associated with higher physical fatigue scores. This large-sample confirmation that sleep disruption translates into measurable academic cost lends external validity to the present study's own finding that lack of sleep was the most frequently cited driver of fatigue, and that students reporting the greatest disruption also tended to report the weakest grades.

A contrasting, population-level perspective comes from economics rather than health science. Hornung et al. (2023) analyzed international TIMSS and PISA test-score panels spanning several decades and found that longer daily Ramadan fasting hours were associated with improved, not worsened, subsequent academic performance among Muslim adolescents an effect the authors attribute to the social capital and shared identity built through communal fasting practices, rather than to any physiological benefit of fasting itself. This large-scale, indirect measure of post-Ramadan achievement does not contradict the present study's finding of acute, within-month fatigue; rather, it suggests that the social and behavioural dimensions of Ramadan may offset physiological

costs over a longer time horizon, offering one possible explanation for why this study's participants preserved participation and mood (Section 5.4) despite substantial sleep loss.

What remains largely absent from this literature is a population-specific account of secondary-school adolescents a group that combines the physiological demands of puberty with the cognitive demands of a fixed academic schedule, and cannot adjust their daily routine as freely as adults or athletes. Existing adolescent-focused work, such as Miladi et al. (2024) and Hornung et al. (2023), has so far relied either on brief, laboratory-style cognitive testing or on large but indirect administrative test-score data, rather than the sustained, real-world, self-reported academic and physiological experience students describe over the whole month. The present study addresses this gap by examining physical and cognitive fatigue, sleep architecture, and academic self-report together in a single adolescent school cohort, over the full duration of the fasting month rather than a single testing session.

3. Research Questions and Hypotheses

3. 1 Research Question

To what extent does Ramadan fasting influence subjective physical and mental fatigue among adolescents, and what are the primary behavioural drivers of these changes?

3. 2 Hypotheses

The primary hypothesis (H1) is that secondary school students experience a measurable increase in both physical and mental fatigue during the month of Ramadan. The secondary hypothesis (H2) is that this increase in fatigue is primarily correlated with sleep disruptions and alterations in daily routines such as altered meal timings and nocturnal activity rather than with the physiological act of fasting itself.

4. Methodology

4. 1 Participants and Setting

The target population for this study consists of 17-year-old adolescents enrolled in Year 12 (Classe de Première) at the Lycée Français Bonaparte in Doha, Qatar. Participation was restricted, via the study's inclusion criteria, to students who self-identify as Muslim and actively observe the daily fast from dawn (Fajr) to sunset (Maghrib) during Ramadan.

4. 2 Distinguishing Features of This Study's Design

This study departs from the existing literature reviewed in Section 2 in three respects. First, population: where prior work on Ramadan-related fatigue concentrates on adult university students (Elsahoryi et al., 2025; Attash et al., 2025), elite or amateur athletes (Khemila et al., 2023), or brief single-session laboratory testing of younger adolescents (Miladi et al., 2024), this study surveys a full class-cohort of secondary-school students in an ordinary academic setting, over the complete span of the fasting month rather than a single pre/post time-point.

Second, measurement scope: rather than isolating a single outcome (e.g., reaction time, sleep quality, or grades), the instrument deliberately combines four domains energy, cognition, sleep, and hydration/nutrition with a direct academic self-report item in one short survey, so that within-student associations between physiological strain and classroom outcomes can be examined descriptively (Section 5.2) without requiring separate studies or data linkage.

Third, the instrument explicitly asks students to identify their time of peak daily well-being (Appendix 3, Item 3). This single item was included specifically to test, at low respondent burden, whether the circadian phase shift documented under controlled laboratory conditions elsewhere in the literature (Qasrawi et al., 2017) is also detectable as a subjective, self-recognized pattern in an ordinary school population a simple but, to the authors' knowledge, uncommon design choice in adolescent-focused Ramadan research.

4. 3 Research Design and Instrumentation

A quantitative approach was utilized via a structured, anonymous questionnaire administered in a controlled classroom setting under teacher supervision. To optimize response clarity for the demographic, participants evaluated statements regarding their well-being using a 3-point Likert-type scale: Positive (e.g., Increased/Improved), Neutral (e.g., No Change), and Negative (e.g., Decreased/Worsened). The questionnaire operationalized fatigue by targeting four core behavioural and physiological domains: energy levels (subjective physical stamina throughout the school day), cognitive performance (concentration, focus, and mental alertness during lessons), sleep architecture (total sleep duration, sleep quality, and waking times), and hydration and nutrition (perceived impact of altered fluid and food intake).

Instrument Provenance: The questionnaire (Appendix 3) was developed by the authors specifically for this study, as no existing validated instrument was identified that targets self-reported physical and cognitive fatigue in adolescent students during Ramadan. Item wording and the three-point response format were reviewed for clarity and age-appropriateness by the supervising teacher prior to administration. As an author-developed instrument, no third-party licensing or permissions were required.

4. 4 Sampling Procedure

A convenience (non-probability) sampling approach was used: all fasting-eligible students within a single, intact Year 12 cohort at one school were invited to participate during a designated class period, rather than sampling across multiple schools or year groups. This approach was chosen deliberately for a school-based project of this scale: it holds curriculum, academic calendar, and daily schedule constant across respondents, which reduces a source of variation that multi-school designs must otherwise control for statistically, at the cost of limiting generalizability beyond this school (see Section 6.1).

4. 5 Data Analysis Plan

Responses were compiled and analyzed using descriptive statistics. For the continuous sleep-duration item, the mean, standard deviation, and median were calculated. For all Likert-scale items, response categories were coded numerically (Positive = 3, Neutral = 2, Negative = 1) to allow the distribution of responses to be summarized as percentages and compared across the four domains (Section 5.4) and against the two directly reported outcome items time of peak well-being and change in grades (Sections 5.2–5.3). No inferential statistical tests (e.g., chi-square, correlation) were applied, given the descriptive, single-cohort, cross-sectional nature of the design; associations reported in Sections 5 and 6 are therefore descriptive patterns rather than statistically tested relationships, a limitation noted further in Section 6.1.

4. 6 Ethical Considerations

This study was conducted in compliance with the Declaration of Helsinki (2013), as revised at the 75th General Assembly (October 19, 2024). As a minimal-risk educational survey with anonymous, voluntary participation, it was exempt from formal IRB review per university policy. No personally identifiable information was collected, and participants were informed of the study's purpose and their right to withdraw without penalty. The project was approved and supervised by Lycée Bonaparte administration and the classroom teacher.

5. Results/Findings

5. 1 Sample Overview

This section presents a descriptive and frequency-based analysis of the physiological, behavioural, and academic impacts of Ramadan fasting on students, based on a sample of $N = 50$.

5. 2 Perceived Fatigue Drivers and Academic Impact

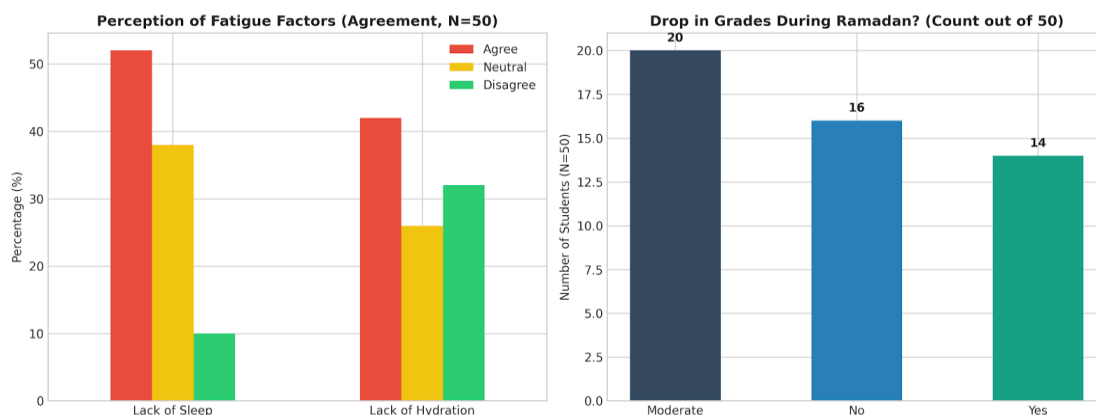


Figure 1. Self-reported fatigue drivers (left) and self-reported change in grades during Ramadan (right).

Lack of sleep was identified as the single largest contributor to fatigue, with 52.0% of respondents agreeing, 10.0% disagreeing, and 38.0% remaining neutral. Dehydration was also recognized as a significant factor (42.0% agreement), though opinion was more divided (32.0% disagreement, 26.0% neutral).

Regarding academic performance, the largest group of students (20/50, 40.0%) reported a moderate fluctuation in grades during Ramadan; 16 students (32.0%) reported no drop, and 14 students (28.0%) reported a clear decline relative to the rest of the academic year. While sleep restriction and dehydration were widely acknowledged as primary drivers of fatigue, the majority of students (72.0%) experienced only a moderate or no impact on academic standing, with a definite decline reported by 28.0%.

5. 3 Sleep Duration and Circadian Shift

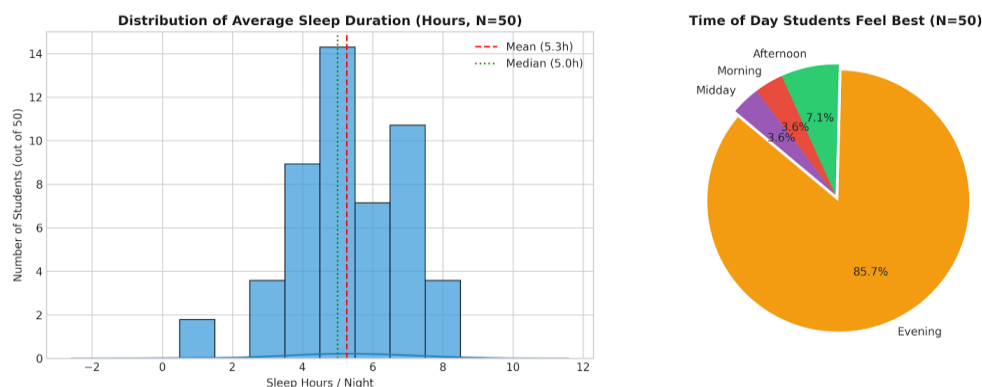


Figure 2. Distribution of nightly sleep duration (left) and time of day of peak energy (right).

Sleep duration was distributed around a mean of 5.3 hours and a median of 5.0 hours per night, well short of the 8–10 hours recommended for adolescents by the National Sleep Foundation (Hirshkowitz et al., 2015). Most students reported sleeping between 4 and 7 hours, with the largest concentration in the 4.5–5.5-hour range (≈ 14 students) and a secondary peak in the 6.5–7.5-hour range (≈ 11 students), suggesting a smaller sub-group preserved near-standard sleep durations despite the fasting schedule.

An overwhelming majority of students (85.7%) reported feeling at their best in the evening (post-Iftar/Suhoor window), compared with a combined 14.3% for the afternoon (7.1%), morning (3.6%), and midday (3.6%). This indicates a marked inversion of typical diurnal alertness, with students deferring their period of peak cognitive and physical well-being to the evening hours after breaking their fast.

5. 4 Well-Being Across Behavioural Domains

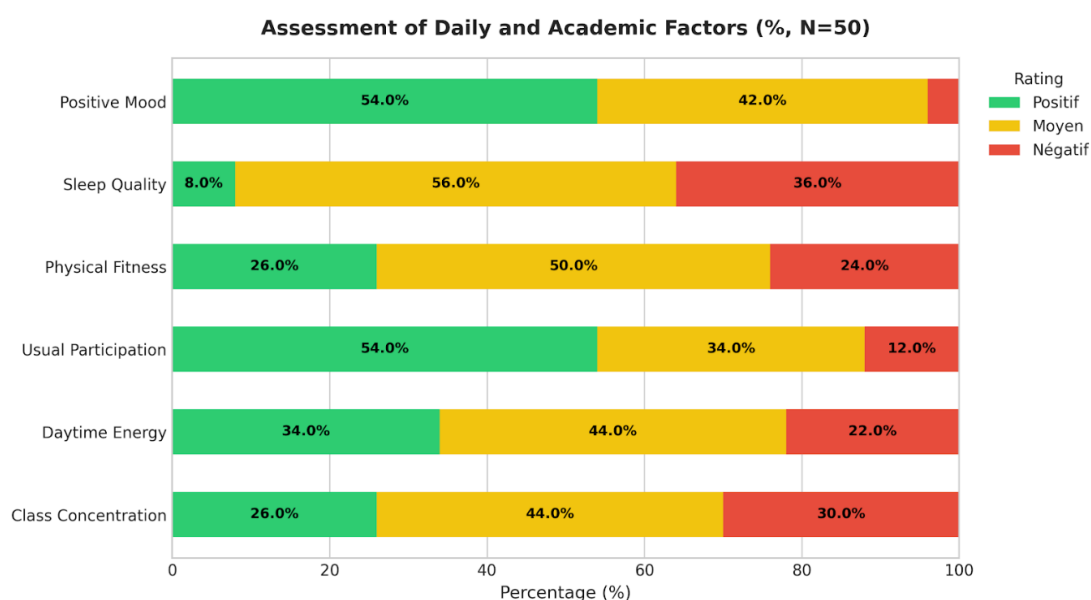


Figure 3. Self-rated experience across sleep, concentration, energy, mood, and participation domains.

Sleep quality was the most negatively affected domain, rated Negative by 36.0% of respondents and Moderate by 56.0%, with only 8.0% reporting a positive experience. Classroom concentration and daytime energy also showed notable declines, with 30.0%

rating concentration as negative and 22.0% rating daytime energy as negative, while the majority in both categories clustered around moderate levels (44.0%).

By contrast, students demonstrated marked socio-behavioural resilience: both Positive Mood and Usual Participation retained high positive ratings (54.0% each), with comparatively little negative feedback (4.0% and 12.0%, respectively). This pattern indicates a dichotomy between internal physiological fatigue and external behavioural engagement while fasting and altered sleep cycles measurably degrade rest, energy, and classroom focus, students appear to actively compensate to preserve their overall disposition and classroom involvement.

5. 5 Summary of Key Findings

Taken together, mean sleep duration was 5.2 ± 1.7 hours per night (median 5.0 hours), well below adolescent recommendations, and 60.0% (30/50) of students reported that their sleep was actively disrupted during the month. A pronounced circadian phase shift was evident, with 86.0% (43/50) of students reporting their optimal sense of well-being in the evening, after Iftar. Classroom concentration was reported as positive by only 26.0% (13/50) of students, with 44.0% rating it moderate and 30.0% low, while only 34.0% (17/50) sustained daily energy and 66.0% experienced moderate-to-critical energy deficits. Despite this, 54.0% of students maintained their usual participation and a positive mood despite physiological fatigue. Lack of sleep (52.0%) and insufficient hydration (42.0%) were the two most commonly cited drivers of fatigue, and 28.0% (14/50) of students reported a clear negative impact on grades, against 32.0% reporting moderate fluctuation and 40.0% reporting no measurable decline.

6. Conclusion

This empirical investigation, conducted across a cohort of $N = 50$ students, provides insight into the physiological and academic effects of Ramadan fasting on adolescent students.

First, the data confirm a critical chronic sleep deficit, characterized by a mean nocturnal rest of 5.2 hours. This restriction directly fuels daytime fatigue, which over half of the student body identifies as its primary operational hurdle. Second, the data demonstrate a pronounced circadian phase shift: with 86.0% of students experiencing peak vitality exclusively during evening hours, daytime academic engagement is inherently compromised, contributing to widespread deficits in classroom concentration (30.0% negative ratings) and diurnal energy (22.0% negative ratings).

Crucially, despite severe physiological stressors and disrupted sleep architecture, the data reveal notable resilience and adaptability among secondary students. While concentration and energy are measurably reduced during morning and afternoon instructional blocks, over half of the cohort successfully preserved standard participation rates and a positive mood. Furthermore, a self-reported drop in grades was restricted to a minority (28.0%), suggesting that students employ compensatory coping mechanisms, such as post-school rest or peer support, to mitigate academic fallout.

In summary, while Ramadan introduces acute biological and circadian challenges for adolescent learners primarily driven by sleep deprivation and dehydration its overall impact on academic achievement is moderated by high personal resilience. This mirrors the apparent paradox identified at population scale by Hornung et al. (2023), whose analysis of international test-score data found that the social and communal dimensions of Ramadan can offset its physiological costs over time; the present study's classroom-level data suggest a similar offsetting process may already be visible within the month itself, not only afterward. Future institutional interventions should focus on targeted student guidance regarding sleep hygiene, pre-dawn hydration strategies, and flexible workload pacing to optimize both health and scholastic performance during fasting periods; adjusted school-day timing, discussed by Bahammam and Pirzada (2021) as a contested but widely adopted policy tool, may also merit consideration alongside these classroom-level measures.

6. 1 Limitations and Future Research

This study has several limitations. The sample was drawn from a single school ($N = 50$), which limits generalizability to other adolescent populations, educational systems, or cultural contexts. All measures were self-reported, with no objective tracking of sleep (e.g., actigraphy) or cognitive performance (e.g., reaction-time testing), so findings reflect perceived rather than measured fatigue. The cross-sectional design captured experience during Ramadan without a pre-Ramadan baseline for the same students, making within-subject comparisons impossible. Finally, the three-point Likert scale, while accessible for the age group, offers less granularity than a five- or seven-point scale and may compress meaningful variation in responses.

Future research would benefit from a pre-post design with an objective sleep or cognitive measure, a larger and multi-school sample, and a longitudinal follow-up tracking whether fatigue and academic effects change across successive weeks of the fasting month.

Statements and Declarations

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Conflicts of Interest

The authors declare no conflict of interest.

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Appendices

Appendix 1



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June 6, 2026

To Whom It May Concern,

I, Cécile SORIA, Biology and Life Sciences (SVT) Teacher at Lycée Bonaparte, hereby certify that Nina ESCOMEL successfully carried out a research project entitled:

“The Influence of Ramadan Fasting on Students’ Cognitive Performance.”

The project was conducted within my class during the academic year 2026. I confirm that the questionnaire data collected by the student are genuine and were obtained from actual students in my class. Participation was voluntary, and all responses were collected anonymously.

To the best of my knowledge, the data were gathered appropriately and used solely for the purposes of this research project.

Sincerely,

Cécile SORIA
Biology and Life Sciences (SVT) Teacher
Lycée Bonaparte



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Appendix 2 Student Concentration & Fatigue Survey

Evaluating Physical and Cognitive Impact During Ramadan Fasting

Notice: This questionnaire is exclusively for high school students observing Ramadan. Please complete all sections regarding your concentration, sleep, and physical experience by checking the appropriate boxes.

Section 1: Academic & Daily Habits Information

- 1. What grade are you in? ☐ Second (Seconde) ☐ First (Première) ☐ Final year (Terminale) ☐ Other: _____
- 2. How many hours of sleep did you get on average during Ramadan? Average daily sleep: _____
- 3. Time of day when you felt your best: ☐ Morning ☐ Noon ☐ Afternoon ☐ Evening ☐ Other: _____
- 4. Were your grades worse during Ramadan than during the rest of the year? ☐ Yes ☐ Average / Unchanged ☐ No

Section 2: Daily Experience & Physiological Symptoms

Please indicate your experience for each statement (Positive / Average / Negative):

- I was able to concentrate well in class
- I participated as much as usual
- I had enough energy during the day
- I felt physically fit during Ramadan
- I could do sports or physical activity
- I slept well during Ramadan
- My sleep was disturbed
- I often woke up at night
- I felt tired during the day
- Lack of sleep was affecting my fatigue
- Dehydration was affecting my fatigue
- I drank enough water after Iftar
- I had frequent headaches
- I felt stressed or irritable
- My mood was positive
- After Ramadan, I felt better
- My energy level returned to normal quickly