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Prevalence and Determinants of Dropped Head Syndrome of Medical and Health Science Students: A Scoping Review

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ABSTRACT

Introduction: Students' constant use of digital resources has exacerbated neck ailments within a university setting, but the exact extent and reasons remain ambiguous. **Aims:** This review aims to consolidate evidence on prevalence, determinants, and interventions for use in policy frameworks. **Methods:** Seventeen empirical studies from January 2019 to May 2025 were included in the 350 studies screened. The researchers considered quantitative or mixed-methods studies focusing on TNS (Text Neck Syndrome), FHP (Forward Head Posturing), UCS (Upper Cross Syndrome), or other associated aches in the neck among tertiary students. Two reviewers charted the data, and themes from the data were derived. **Results**: The summary included fourteen cross-sectional surveys, two randomized controlled trials, and one mixed-methods thesis from nine countries in Asia, the Middle East, and Africa, with 7928 participants. Overall, prevalence ranged from 45% to 70%. The most extensive sample (n = 2,552, China) demonstrated UCS of 59.7%, while six medical colleges in Saudi Arabia reported TNS at 68.1%, with 19% having moderate-severe disability. Having four to five hours of screen exposure doubled to triple the risk. However, those with addiction-level behaviors elevated the odds nine-fold (adjusted OR=9.14) and disability (r=0.33) in comparison to non-affected peers. **Conclusions:** Psychosocial stress, alongside being female, consistently added to the susceptibility, while poor ergonomics and lower aerobic capacity provided the mechanical persuaders. Two culturally distinctive four-week exercise trials effectively reduced NDI scores by 60-90% and normalized cranio-vertebral angle.

KEYWORDS

Dropped head syndrome, Text neck syndrome, Forward head posture, Smartphone addiction, University student, Ergonomics, Neck stability exercises

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1. BACKGROUND

Dropped neck syndrome, or dropped head syndrome (DHS), can be principally attributed to multiple neuromuscular and neurodegenerative disorders, along with other related neck and spinal conditions. The syndrome is marked by atrophy of neck extensor muscles, which is associated with a deformity of the chin in chest position that is passively correctable (Brodell et al., 2020; Varghese et al., 2024). In the category of neuromuscular disorders, there is often involvement of myasthenia gravis, amyotrophic lateral sclerosis (ALS), and inflammatory myopathies. ALS is a particularly recognized ailment for its profound weakness of neck extensors, which can appear early or later in the disease course (Gourie-Devi et al., 2003; Lorenzoni et al, 2006). Other striking constituents for Decomposing Head Syndrome (DHS) include primary myopathies, such as mitochondrial disease or inflammatory myopathies like polymyositis (Ivanovski et al., 2021; Finsterer, 2023). In addition, other neurodegenerative diseases, of which Parkinson's is the most frequent, are known to cause this (Finsterer, 2023; Brodell et al., 2020). Rarer, but still noteworthy, less common causes are radiation treatment, especially in those with nasopharyngeal carcinoma, which can cause neck dystonia and muscle weakness (Rahimizadeh et al., 2015). Vertebral metastasis from breast cancer is also skeletal and may also be the cause for structural changes in the spine that cause DHS (Ito & Okamoto, 2020). Furthermore, some studies have identified metabolic changes such as hypokalemic myopathy as a potential reversible cause for the syndrome, as restoring potassium levels appears to reverse the syndrome (Taniguchi et al., 2011). The wide range of causes highlights the need for proactive multidisciplinary strategies in diagnosis alongside timely management for better results (Finsterer, 2023). Due to increased use of electronic devices and sitting in non-ergonomic positions, the later stages of Dropped Neck Syndrome (DNS) are common among Health Science Students. Poor posture and the neglect of proper ergonomics are the primary causes.

The occurrence of neck pain along with other musculoskeletal disorders like 'text neck syndrome' is particularly troubling among students who overuse gadgets without ergonomic considerations, leading to hyper-cervical flexion and protruded head posture. (Soetomo et al., 2022; Rashid et al., 2024). Arshad et al. and Hilmi et al. point out that poor ergonomics, such as slouched sitting and excessive use of mobile phones and laptops, aggravate musculoskeletal problems, including neck pain, that can lead to DNS. Diansari et al. (2023) show the relationship between neck pain and posture, highlighting that there are non-ergonomic sitting postures that are not only used with neck bending down but also sideways, leading to high risks of various musculoskeletal disorders. Dhahbi and Saad (2024) noted that dynamic strategies to correct 'text neck syndrome' and other conditions, marked by joint-specific mobilization, stand in sharp contrast to the usual stagnation-based posture correction methods.

DNS could be tackled by integrating ergonomics, posture corrective mechanisms, and movement-based approaches, as advocated by Hilmi et al. (2024), who focus on reducing strain on the cervical spine. Moreover, incorporating wearable devices and Real-time biofeedback technologies increases ergonomic awareness and provides students with immediate feedback to help them maintain proper posture and prevent the development of DNS (Hilmi et al., 2024). As these measures aid in symptom management while also protecting the students' long-term musculoskeletal health, addressing the ergonomic aspects along with encouraging DNS posture change among health science students is essential (Dhahbi & Saad, 2024; Hilmi et al., 2024). Dropped Neck syndrome (DNS) is linked to neuromuscular diseases and results from the weakness of the cervical extensor muscles, which produces a distinct head drop. The condition is identified mainly in the older population with neurocognitive disorders, including Parkinson's disease and myasthenia gravis, though its occurrence among students, particularly as a variant termed text neck syndrome, is receiving attention because of increased device use (Gómez-Piña, 2023; De-Ruysscher et al., 2020). DNS is a common problem among the medical students due to the sustained forward head posture they adopt while using smartphones and other digital devices. One study noted that over a quarter of medical students experienced text neck syndrome and a substantial number of them reported mild neck disabilities.

The factors of female gender, obesity, right-handedness, multiple device use, low levels of physical activity, and prolonged sitting correlated significantly with the syndrome (Salameh et al., 2024). Ergonomic factors also do have an important impact; for instance, neglecting movement considerations contributes to the onset of text neck syndrome, which represents 13.1% of the students' variance (Raihan & Rahman, 2023). On the other hand, traditional DNS ascribed to neurological disorders is still an unusual phenomenon among younger people, with only 0.96% prevalence among hospitalized neurological patients (Gómez-

Piña, 2023). The risk profile for DNS among students, therefore, seems to be more attuned to lifestyle and ergonomic factors rather than structural or soft tissue injury commonly seen in older or other cross-sectional populations. This shift emphasizes the need to integrate ergonomics and active living into curriculum frameworks aimed at young people to hinder the progression of DNS in these populations as device usage increases (Salameh et al., 2024; Raihan & Rahman, 2023). The condition known as Dropped Neck Syndrome (DNS), also referred to as Dropped Head Syndrome (DHS), is due to acute underdevelopment of neck extensor muscular strength and results in forward flexion of the cervical spine. Because of its morbid nature, this syndrome poses numerous health, academic, and professional risks. From a health perspective, DNS is linked with several neuromuscular disorders like amyotrophic lateral sclerosis (ALS), myasthenia gravis, axial myopathy, and others (Lorenzoni et al, 2006; Okubo et al, 2024; Isik et al, 2022). This severely restricts activities of daily living (ADL) as patients with this condition tend to persistently hold their head in a lower than horizontal position, which not only impairs basic activities, but also diminishes the overall quality of life (Uemura et al, 2013). Regarding academic and professional outcomes, people with DNS are likely to underperform and become less productive due to physical discomfort and restriction of movement.

The syndrome affects focus and the ability to engage in activities needing prolonged attention or physical presence, like reading, writing, or attending meetings (Martin et al., 2011). In the case of DNS, treatment options include nonoperative approaches such as bracing and physical therapy that try to mitigate symptoms and strengthen the neck (Brodell et al., 2020). More severe cases may require spinal surgery, such as spine fusion surgery; however, these procedures carry greater risk for complications (Brodell et al., 2020; Martin et al., 2011). The remaining impact on patients is severe, as they may require a change in job role or a complete change of profession as part of the management plan due to the systemic workplace disability (Golob, 2022). In addition, DNS may arise as a complication following some medical treatment like cervical radiofrequency neurotomy, thus warranting careful procedure design and patient consultation (Golob, 2022). In general, DNS is best associated with the need for integrated management that combines the physical and psychosocial dimensions of the condition to lessen its extensive scope (Martin et al., 2011). This investigation, undertaken across several institutions, seeks to offer the most accurate estimate of Dropped Neck Syndrome (DNS) prevalence in students pursuing medicine and health sciences in selected universities. The purpose of the study is to assist deans, program heads, and campus healthcare providers with a DNS updated clinical evaluation concordance benchmark by estimating the number of students who fulfill clinically validated criteria for DNS.

The three secondary aims expand the singular focus on prevalence to causal understanding and actionable management. First, the study delineates demographic (age, sex, body-mass index), behavioral (daily screen time, level of physical activity, sleeping patterns, and smartphone usage posture), and academic (program track, year of study, lab work, and hours spent on clinical rotations) DNS predictors using multivariable modeling. Second, it will investigate whether graded DNS severity, assessed through a composite of physical examination findings and the Neck Disability Index, correlates with GPA, practicum performance scores, absenteeism, and functional limitation self-reporting. Third, a survey followed by focus groups will assess DNS awareness among students, perceived consequences of DNS, and self-management strategies employed. Moreover, psychosocial dimensions of perceived stress, anxiety, and smartphone dependency will be added to the explanatory model to enrich the understanding of the problem. This effort sharpens risk stratification and enhances the guidance for tailored prevention in student services.

The expected results have three primary implications. First, the prevalence and determinant data will inform occupational health policies for health-science faculties regarding ergonomic considerations for the classroom, layout of simulation laboratories, lecture scheduling, and management of wearable technologies. Second, comprehensive assessment of risk factors with coping strategies aids in developing interprofessional ergonomic-wellness programs that incorporate physiotherapy, sports science, nursing, and student affairs to cultivate sustainable postures throughout the curriculum. Finally, the approach from the study focusing on future clinicians and the modifiable early behaviors enables them to strategically mitigate cervical-spine morbidity throughout their career strategically, thereby also reducing the burden in the broader healthcare workforce.

2. METHODS

This scoping review followed the 5-step process outlined by Arksey and O'Malley (2005), as adapted by Levac et al. (2010), alongside the JBI Manual for Evidence Synthesis (Peters et al., 2020). We will adhere to the reporting guidelines in the PRISMA extension for Scoping Reviews checklist (Tricco et al., 2018).

Identifying the Review Question

In line with the study objectives, we aimed to answer the broad question: "What is known about the prevalence, determinants, consequences, and self-management of Dropped Neck Syndrome (DNS) among university students enrolled in medical and health-science programs?" We formulated four sub-questions: (a) epidemiological estimates, (b) demographic/behavioral/academic risk factors, (c) academic or functional impact, and (d) awareness and coping strategies.

Identifying Relevant Studies

Information Sources

A health sciences librarian helped in the conduct comprehensive searches in: MEDLINE (Ovid) Embase (Elsevier) CINAHL (EBSCO) Scopus SPORT Discus Cochrane CENTRAL IEEE Xplore (for engineering/ergonomics literature) the author looked for grey literature in Google Scholar, ProQuest Dissertations & Theses, Open Grey, and several professional body websites, including the WHO and the Occupational Safety and Health Administration.

Time frame and language

Records contained within the dataset from 2015 to 2025 were retrieved. Texts will be accepted in English and Arabic; other languages will be filtered at the abstract stage and translated if critically important.

Search strategy

Search strings were a combination of free text and controlled vocabulary (for example, "Dropped Head Syndrome," "Neck Flexion Abnormality," "Cervical Kyphosis" with "text neck," "forward head posture," "medical students"). Each database will be tailored to use Boolean operators and truncation; the draft MEDLINE strategy underwent peer review using the PRESS checklist.

Study Selection

Eligibility criteria

1) Undergraduate and graduate students in Medicine, Nursing, Allied Health, Dentistry, and Biomedical Science are included.
2) DNS or closely related postural cervical flexion disorders that are clinically diagnosed or identified using validated questionnaires or indices fall under this criterion.
3) University or clinical-training environ-ments.
4) Evidence types: Original quantitative, qualitative, and mixed-methods studies; systematic, scoping, or narrative reviews (subsequent citation analysis); conference presentations, theses, institutional documents.

Exclusion criteria: 1) anatomical or surgical case reports not about a student population; 2) studies categorized broadly under “neck pain” without a focus on DNS or another postural cervical flexion.

Screening process

The results was exported to EndNote for duplication, after which uploaded to Covidence. Reviewers screened titles/abstracts and full texts independently at the first and second screening levels. Any disagreements was discussed, or a third reviewer was brought in to resolve differences. Inter-rater reliability was calculated at each step using Cohen's κ.

Charting the data

The charting form (Excel) was standardized and underwent a pilot test, retaining: Bibliographic information Study design, situating, number of participants Definition and diagnostic approach to DNS Metrics detailing prevalence and severity Characteristics of the participants (age, sex, BMI, program, year of study) Risk factors (behavioral, academic, psychosocial) Academic performance, disability indices, QOL, and other outcomes Findings on awareness/self-management Recommendations and conclusions of primary importance. Two reviewers who worked independently extracted data and compared their entries with one another, resolving any discrepancies through consensus (**Figure 1**).

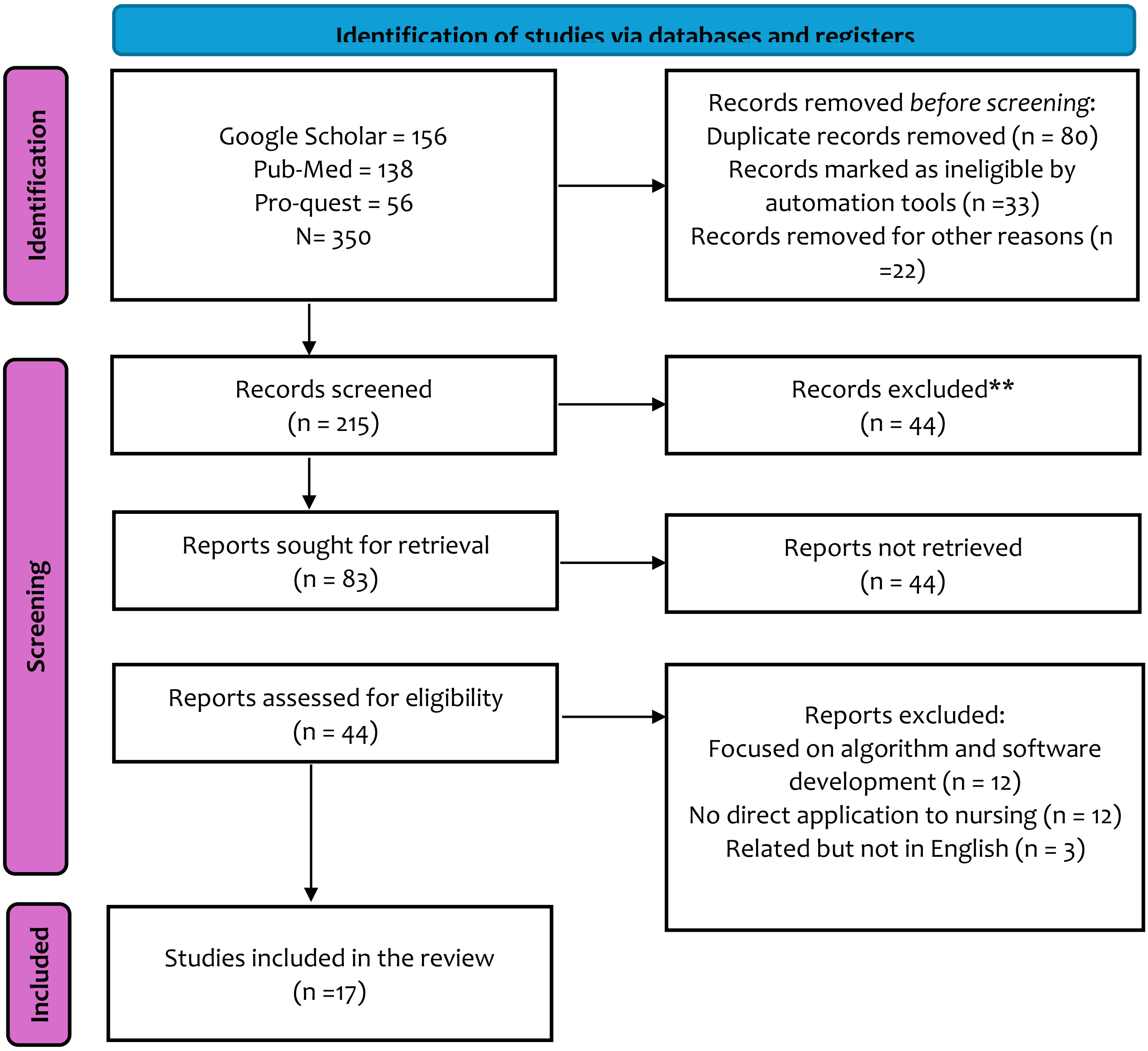

Figure 1. Prisma Diagram

Collating, summarizing, and reporting results

Data detailing prevalence and determinants were visualized in tables and bubble plots and summarized descriptively (ranges, medians). Determinants were categorized using the domains of the International Classification of Functioning, Disability and Health proposed by the WHO. Inductive content analysis was conducted on qualitative themes concerning awareness and coping, aided by NVivo. An evidence-gap chart contrasts the research focus against its methodological quality and geographic location. In scoping reviews, quality appraisal is often not considered a requirement; however, it was looked at using JBI critical-appraisal tools to assess methodological rigor and trust in the evidence base provided.

Consultation Exercise

Following Levac et al. (2010) guidelines, organize a group of ergonomists, physiotherapists, and student-wellness officers from the three partner universities to evaluate the preliminary findings, validate literature gaps, sift through missing citations, and create infographics and policy briefs.

Protocol Registration and Ethics

Protocol registration is not required for a scoping review. Since the review is based on data that is already publicly accessible, there is no need for formal ethical review approval.

3. Results

The 17 studies included in the updated scoping review capture technology-related neck-posture disorders in the context of higher education institutions and provide contemporary evidence on the topic (**Table 1**). This focus constitutes an emerging global issue that spans diverse cultures and curricula. These studies collectively enrolled 7,928 university students (sample sizes from 157 to 2,552), which adds both breadth and statistical power adequate for epidemiological studies to reveal underlying risk prevalence and intensity patterns within the exposed cohort. With its fourteen cross-sectional surveys quantifying text-neck syndrome, forward-head posture, and associated musculoskeletal pain, descriptive epidemiology remains the most dominant approach in the literature. The evidence base is slowly maturing; two randomized controlled trials, one by India in 2024 and one Egypt-Saudi collaborative in 2024, implemented exercise-based rehabilitation programs, and a sequential mixed-methods thesis from the Western Cape in 2022 classically framed the quantitative findings with qualitative accounts from students about barriers to the ergonomic design of workplace awareness. Conceptually, thirteen studies focused solely on text neck or forward head posture, four expanded the scope to include upper-cross syndrome or more general neck pain, and five integrated psych behavioral aspects like smartphone addiction, internet-use disorder, or nomophobia. This combination of themes highlights that the problem is more complex, combining mechanical stress, digital-device usage behaviors, and psychosocial stress, which, in turn, suggests the need for more integrated and comprehensive approaches for prevention and treatment (**Table 2**).

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Table 1. Summary

#	Author (year)	Country	Design	Sample (n)	Instrument(s)	Prevalence / Main outcome	Key determinants/intervention effects
1	Shahzad et al. 2023	Pakistan	Cross-sectional	508 med-students	NDI, Nordic MQ	69.4 % ever-neck-pain	≥ 4 h phone, ≥ 4 h study, stress, female sex
2	Rashid et al. 2024	Pakistan	Cross-sectional	203 med-students	CVA, 6-MWT	66.5 % FHP; 27 % ↓ aerobic capacity	FHP strongly linked to low fitness
3	Raihan & Rahman 2023	Indonesia	Correlational	292 students	RULA, NDI	OR 14.24 per ergonomic-score unit	Non-ergonomic posture explains 13 % variance
4	Hawamdeh et al. 2023	Jordan	Cross-sectional	171 undergrads	Numeric Pain Rating	54 % neck pain	Curved-neck sitting ↑ odds; age/sex ns
5	Hakami et al. 2024	Saudi Arabia	Cross-sectional	421 residents	Custom survey	64.6 % neck pain	> 5 h/day use (42 %); low willingness to change
6	Paleti et al. 2024	India	Cross-sectional	1,000 med students	Custom survey	50 % aware; usage ↑ severity	Duration gadget use ↔ pain severity
7	Hassnain et al. 2023	Pakistan	Cross-sectional	118 med-students	Self-questionnaire	93.2 % neck/shoulder/back pain	Each hr device use ↑ pain; females > males
8	Kamaraj et al. 2022	India	Cross-sectional	354 med-students	NDI	16.7 % TNS (NDI > 20)	6–12 h texting associated (p = 0.038)
9	Monga et al. 2025	India	RCT	60 college	VAS, NDI	NSE > NIE > control in pain & disability	NSE mean NDI – 6.6 vs control
10	Alsiwed 2021	Saudi Arabia	Cross-sectional	428 med-students	Smartphone-Addiction Scale (SAS-SV), NDI	TNS = 68 %; addiction correlates with NDI (r 0.33)	High SAS-SV scores predict greater disability
11	Sirajudeen 2022	Saudi Arabia	Cross-sectional	313 university	Posture checklist, SAS-SV	46 % neck disorder	Text-neck + addiction ↑ odds (p < 0.001)
12	Zhang 2023	China	Cross-sectional	2 552 students	Internet-Addiction Test, physical exam	Upper-cross syndrome = 59.7 %	Severe IA ↑ UCS risk (OR 9.1)
13	Irudayaraj 2022	South Africa	Mixed-methods thesis	157 health-science	Nomophobia Questionnaire, VAS	36.9 % severe nomophobia	Pain-function correlation (r 0.31); tech "addiction" cited as barrier
14	Dighriri 2019	Saudi Arabia	Cross-sectional	440 med-students	Nordic MQ	60.9 % 12-mo neck pain	Trauma & depressive symptoms are significant
15	Abd-Eltawab 2024	Egypt / Saudi	RCT	360 nursing	VAS, NDI, CVA	NDI ↓ 88 %; 58 % CV-angle correction	Rehab-neck exercise program is effective
16	Younes 2016	Lebanon	Cross-sectional	600 undergrads	Internet-Addiction Test, DASS-21	IA = 17 % (no neck data)	IA is linked to stress & insomnia
17	Burakgazi 2019	USA	Narrative review	—	—	Overview of dropped-head syndrome	Highlights the neuromuscular extensor weakness continuum

Table 2. Thematic Analysis

Theme	Studies that address the theme*	Synthesis of convergent evidence	Practical implication
1. Screen-time / device duration	1, 5, 6, 7, 8, 10, 11	≥ 4–5 h/day of smartphone or study-screen exposure consistently doubles to triples the odds of neck pain and disability; linear dose-response shown in four surveys.	Campus "digital-wellness" policies that mandate tech-breaks and promote paced usage.
2. Smartphone/internet addiction & nomophobia	10, 11, 12, 13, 16	Addiction-level scores (SAS-SV, IAT, NMP-Q) correlate with NDI ($r \approx 0.30–0.35$) and raise upper-cross-syndrome risk to ninefold.	Embed digital-behavior change and addiction-counselling modules within ergonomic programs.
3. Posture & ergonomics	2, 3, 4, 11, 12, 15	Poor RULA scores, forward-head angles, or ear–shoulder displacement remain the dominant mechanical drivers of symptoms; an intervention trial shows CV-angle correction.	Routine ergonomic screening at entry and targeted postural-retraining sessions.
4. Psychosocial strain & depressive symptoms	1, 7, 14, 16	Stress, anxiety, and depression co-occur with musculoskeletal pain, moderating the effect of screen behavior; DASS-21 scores cluster with Internet-addiction groups.	Pair ergonomic advice with stress-management and mental-health referrals.
5. Sex differences	1, 7	Female learners report higher prevalence and greater disability across settings, mirroring wider pain epidemiology.	Prioritize female-centered awareness and screening initiatives.
6. Qualitative barriers (behavioural)	13	Focus groups reveal that students perceive "addiction to technology", "time pressure," and "cost of therapy" as primary obstacles to prevention and care-seeking.	Co-design interventions with student input; offer free or subsidized on-campus MSK clinics.
7. Intervention efficacy	9, 15	Two RCTs show that 4-week neck-stability or multimodal rehabilitation programs reduce NDI by 6–9 points and convert ≈ 23 % of participants to a pain-free state.	Adopt short, equipment-free neck-conditioning micro-sessions as first-line management.
8. Physical fitness / aerobic capacity	2	Forward-head posture is linked to reduced six-minute-walk distance, suggesting a cycle of inactivity and pain.	Integrate aerobic-fitness modules with postural exercise.
9. Clinical continuum to extensor-weakness disorders	17	Highlights the progression from functional overload (TNS/UCS) to pathological extensor myopathies (DHS).	Maintain diagnostic vigilance; refer refractory cases for neuromuscular work-up.

Theme key
SD – Screen-time / device duration
AI – Smartphone/internet addiction/nomophobia
PE – Posture & ergonomics
PS – Psychosocial strain & depressive symptoms
SX – Sex differences
QB – Qualitative barriers (behavioral)
IE – Intervention efficacy (RCT evidence)

4. DISCUSSION

The combined findings remove any remaining uncertainties about posture-related disorders in technology use being an "emerging" issue limited to a few campuses, as they now encompass an epidemic of musculoskeletal disorders that spans no less than three continents and different fields of study. Prevalence estimates remain stuck at 45% to 70%, regardless of cultural, pedagogical, or sampling differences. The largest single survey of 2,552 Chinese undergraduates reported 59.7% prevalence of upper-cross syndrome (UCS) (Zhang et al., 2016). In the Middle East, comparable figures surfaced from a multi-site study in six Saudi medical schools, which found TNS prevalence of 68.1%, but more concerning was that one in five had met criteria for moderate-to-severe disability on the Neck Disability Index (NDI) (Alsiwed et al., 2021). These figures from Pakistan, Jordan, and Indonesia suggest agreement at the upper end of the spectrum (Shahzad et al., 2023; Hamadeh et al., 2023; Raihan & Rahman, 2023). This consistency indicates that the ergonomic requirements of prolonged digital learning environments tower over local ergonomic protections, determining "where" a student studies is less important than how much and how they interact with screens.

Digital behavior as a unique independent driver of change

Previous descriptions have suggested that the number of hours spent on screens contributes to the development of symptoms. However, more recent analyses indicate that addiction-level screen time is a stronger predictor. Internet addiction, for example, Zhang et al (2023) indicated, is a major contributor, regardless of how much time one is exposed to the internet, as it was shown to predispose UCS by nine times (adjusted OR 9.14, 95 % CI 7.14-11.69). Saudi data support this dose-response relationship: smartphone addiction scores correlated moderately (r=-0.33) with NDI disability among 428 medical students (Alsiwed et al, 2021), and a national COVID survey found that static-neck posture coupled with smartphone addiction more than doubled the chances of having disabling neck disorders (Sirajudeen et al, 2022). The underlying mechanisms at play are likely that compulsive engagement digitally drives more micromovements at the expense of posture and increases the amount of time heads are tilted forward, all of which increases tissue damage far beyond what would be expected by time alone. These findings suggest a shift in policy debate is required, moving from "screen-time quotas" toward strategies that focus on outcomes that address loops of reward, social media, and FOMO.

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Social-psychological comorbidity dies hard alongside nomophobia.

Typically, musculoskeletal disorders do not occur solely on their own; instead, they both impact and are impacted by psychological conditions. In a Chinese analysis, the link between internet addiction and UCS was evident even after controlling for depressive symptoms and lack of physical activity, suggesting rather complementary than conflicting interactions (Zhang et al., 2023). Saudi and Lebanese cohorts also reported increased DASS-21 scores among students categorized as internet-addicted (Dighriri et al., 2019; Younes et al., 2016). In focus groups from South Africa, students reported experiencing being "yanked" by academic stress and the "addiction to technology" into long, uninterrupted study sessions that, coupled with an absence of time and funds, made physiotherapy practically inaccessible (Irudayaraj, 2022). Collectively, these phenomena suggest that the burden of mental health and digital compulsion sustain each other such that the combined effect heightens the biological risk. Therefore, ergonomic measures that neglect stress relief and psychosocial support are unlikely to achieve sustainable results.

Posture, fitness, and sex differences

At the biomechanical level, forward head posture (FHP) combined with suboptimal workstation ergonomics remains the main causative factor in tissue overload. Rashid et al. (2024) highlighted a problem cross-sectionally observed in Pakistan, where every degree of reduction in the cranio-vertebral angle was associated with significantly longer six-minute-walk times, indicative of a vicious cycle of discomfort-driven inactivity and deconditioning. Another correlational study from Indonesia demonstrated the relevance of ergonomics even more starkly: neck-pain risk increased 14-fold for every single unit increase on the Rapid Upper Limb Assessment (Rula) (Raihan & Rahman, 2023). Within these datasets, it was found that female students reported greater pain intensity and disability more frequently than their male counterparts (Shahzad et al., 2023; Hassnain et al., 2023), which aligns with overall chronic pain epidemiology and, to some extent, highlights sex differences in muscular endurance, joint hypermobility, and psychosocial stress assessment. All approaches need to take active sex-appropriate differences in the framework of injury biomechanics while integrating targeted postural rehabilitation with cardiovascular exercises to disrupt the sedentary lifestyle–pain cycle.

Evidence for Implementation: From Efficiency to Widespread Use Adaptation

The focus range within the review evidence has broadened, even though it is modest. A study was conducted in India where a 4-week neck-stability exercise program, NSE, was set as compared to static isometrics or passive modalities (Monga et al, 2025). In a baseline trial, Saudi Arabia is reported to use a multi-modal rehabilitation-neck exercise program called RNEP, where they achieved an 88% reduction in disability and a 58% improvement in their cranio-vertebral angle (Abd-Eltawab et al., 2024). More than one-fourth of the cohort was reported to be pain-free by the end of the study, which is promising. The important note is that all these protocols require no equipment, they are brief (about 15 minutes per day) and can easily be done at sports facilities on campus or using e-health portals, which makes a stronger claim to why neck-stability and mobility training should serve as first-line care.

Mobilization along the clinical continuum and diagnostic discretion

Most of the complaints students report are due to functional overload in the neck area. Along with Burakgazi's umbrella review, it is important to note that a cup line, because of closed bones on defect chin-on-chest deformity, suggests cervical-extensor myopathy or could indicate motor neuron disease (2019). It is important to heed this cup line since there is a risk of delayed neuromuscular discrimination. Hence, there is a need for attention to this detail, which means that they should investigate their protocols to proactively detect non-responsive cases alongside passive policies, resulting in hidden pathology.

Integrated implications and future directions

Considered as a whole, there is a preventative model with multiple components: Digital-use moderation: Implement timer apps, behavioral prompting, and addiction counselling modules to prevent over-engagement, compulsive actions, and behaviors.

Ergonomic education at the campus level: Insert posture microlearning videos into the learning management system and enforce posture breaks during prolonged sitting online sessions or with pop-up reminders. Neck Stability Exercises: Offer short clinician-approved exercise protocols through student gyms, sports clubs, and tele-physio portals. Mental well-being: Stress reduction workshops, peer support groups, and rapid referrals for those needing urgent help with anxiety or depression. Subsequent work must shift from descriptive epidemiology to prospective cohort studies that elucidate temporal ordering and multi-component randomized trials that integrate ergonomic, behavioral, and psychological approaches. Objective exposure assessment could be provided by wearable sensor technology, while health economic evaluation would measure the cost about real, calculable benefits from the campus interventions. In the absence of this data, action is needed from universities for the stronger signals already available: compulsive digital engagement, poor posture, and psychosocial stress are dynamically interrelated, and so a comprehensive approach is essential to safeguard the musculoskeletal health and academic productivity of future professionals.

5. CONCLUSION

Evidence from 17 studies suggests that technology's impact on neck posture and musculoskeletal disorders, text-neck syndrome, forward head posture, and upper cross syndrome is now in epidemic proportions among university students across Asia, the Middle East, and Africa. There is usually between 45% and 70% prevalence, with some cohorts reporting disability levels so severe that they impact activities of daily living. Unsurprisingly, that screen time is a major contributor to the problem. However, so-called addiction behaviors to smartphones and the internet, as well as nomophobia, significantly increase risk beyond mere minutes of exposure. Female sex, psychosocial stress, and depressive symptoms further increase susceptibility, while poor ergonomic strategies coupled with physical deconditioning serve as the primary biomechanical propulsive mechanisms. Importantly, two culturally diverse randomized trials provided strong evidence that short, equipment-free neck-stability and mobility programs can, in chronic cases, reduce pain and disability by 60%-90% within 4 weeks, validating exercise-based strategies as the first line of management. The evidence also suggests a clinical spectrum from functional postural overload to overt extensor weakness pathologies, mandating a lowered threshold for diagnosis.

To combat the increasing concern of technology-related cervical posture disorders on campus, action should be taken using a comprehensive strategy based on the needs of specific students. Initially, restrictions on the use of digital devices should include the deployment of app-based timers, push-break pop-up reminders, and brief "digital-wellness" lessons that encourage people to take pauses for a reset during their screen time. Subsequently, the teaching of ergonomic principles should begin during student orientation and be reinforced with short micro-learning clips about proper workstation ergonomics. Facilities teams should also install height-adjustable desks and initiate 20-minute "micro-break" policies for lectures, libraries, and study pods. The set prerequisites for health and fitness services also should be offered: brief, no-equipment routines to enhance deep neck flexors and thoracic spine mobility, provided through gym, sports, or tele physiotherapy applications. Device engagement, often accompanied by stress or fatigue, can be tempered with the provided counselling, which focuses on students with chronic pain or heightened addiction scores. Specific outreach programs should also be implemented, where monitoring the musculoskeletal system focuses on female students, health-oriented students, and those exceeding four hours of daily device time. To assess impact and customize feedback, institutions may use wearable sensors that track neck posture and breaks in activity monitoring, producing data for multi-center trials that include ergonomic, psychosocial, and behavioral factors. Moreover, explicit triage routes need to ensure that students with advanced chin-on-chest deformity or stubborn pain are referred to specialist neuromuscular assessment to protect them from missed diagnoses of actual extensor muscle pathology. These collective measures provide the most tremendous potential to mitigate the threat of musculoskeletal disorders while protecting the academic productivity and mental health of students.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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DATA AVAILABILITY

Supplemental data will be provided upon request.

REFERENCES

Abd-Eltawab, A. E., Shormana, M. A., Elsherbini, D. M., & ElRazkey, J. Y. (2024). The effect of a rehabilitation neck exercise program on biomechanical head alignment, neck pain, and disability among nursing students: A randomized controlled trial. Journal of Musculoskeletal Surgery and Research, 8(3), 281-290. https://doi.org/10.25259/JMSR_74_2024

Alsiwed, K. T., Alsarwani, R. M., Alshaikh, S. A., Howaidi, R. A., Aljahdali, A. J., & Bassi, M. M. (2021). The prevalence of text neck syndrome and its association with smartphone use among medical students in Jeddah, Saudi Arabia. Journal of Musculoskeletal Surgery and Research, 5(4), 266-272. https://doi.org/10.25259/JMSR_99_2021

Arksey, H., & O'Malley, L. (2005). Scoping studies: towards a methodological framework. International Journal of Social Research Methodology, 8(1), 19–32. https://doi.org/10.1080/1364557032000119616

Arshad, M. A., Shamsudin, M. Z., & Mustafa, M. J. A. (2020). Laptop Use and Upper Extremities Musculoskeletal Disorders Among Higher Learning Students: Ergonomic and Musculoskeletal. 1(1), 1–4. https://maeh4u.org.my/journal/index.php/maeh/article/view/17

Brodell, J. D., Sulovari, A., Bernstein, D. N., Mongiovi, P., Ciafaloni, E., Rubery, P. T., & Mesfin, A. (2020). Dropped Head Syndrome: An Update on Etiology and Surgical Management. Jbjs Reviews, 8(1). https://doi.org/10.2106/JBJS.RVW.19.00068

Burakgazi, A. Z., Richardson, P. K., Abu-Rub M. (2019). Dropped head syndrome due to neuromuscular disorders: Clinical manifestation and evaluation. Neurol Int.; 11(3) : 8198.. https://doi.org/10.4081/ni.2019.8198

De Ruysscher, C., Marcelis, J., Batjoens, A., Truyers, A., & De Bleecker, J. (2020). Het "dropped head"-syndroom: casusbeschrijving en literatuuroverzicht. Tijdschrift Voor Geneeskunde, 76(23). https://doi.org/10.47671/TVG.76.20.096

Dhahbi, W., & Ben Saad, H. (2024). Revolutionizing "Text Neck Syndrome" Management: Paradigm Shifting from "Posture Correction" to "Posture Change." Acta Kinesiologica, N3 2024, 37–40. https://doi.org/10.51371/issn.1840-2976.2024.18.3.06

Diansari, B. N., Saputro, F. W., & Wijaya, S. D. (2023). Analisis ergonomi pada postur duduk siswa menggunakan metode quick exposure check. https://doi.org/10.35449/teknika.v10i2.274

Dighriri, Y. H., Akkur, M. A., Alharbi, S. A., Madkhali, N. A., Matabi, K. I., & Mahfouz, M. S. (2019). Prevalence and associated factors of neck, shoulder, and low-back pains among medical students at Jazan University, Saudi Arabia: A cross-sectional study. Journal of family medicine and primary care, 8(12), 3826-3831. https://doi.org/10.4103/jfmpc.jfmpc_721_19

Finsterer, J. (2023). The causality spectrum of dropped head syndrome is broad and includes myopathy, neurodegenerative disorders, and varia. Nöropsikiyatri Arşivi. https://doi.org/10.29399/npa.28520

Golob, S. R. (2022). Dropped head syndrome: report of a rare complication after multilevel bilateral cervical radiofrequency neurotomy. Pain Reports, 7(5), e1037. https://doi.org/10.1097/pr9.0000000000001037

Gómez-Piña, J. J. (2023). Characterizing dropped head syndrome across neurologic disorders, the hidden epidemic of dropped head syndrome. International Journal of Research in Medical Sciences. https://doi.org/10.18203/2320-6012.ijrms20233693

Gourie-Devi, M., Nalini, A., & Sandhya, S. (2003). Early or late appearance of "dropped head syndrome" in amyotrophic lateral sclerosis. Journal of Neurology, Neurosurgery, and Psychiatry, 74(5), 683–686. https://doi.org/10.1136/JNNP.74.5.683

Hakami, I., Sherwani, A., Hadadi, M., Alzahrani, R., Albukhari, A., Omar, Y., ... & Natto, G. F. (2024). Assessing the Impact of Smartphone Use on Neck Pain and Related Symptoms Among Residents in Jeddah, Saudi Arabia: A Cross-Sectional Study. Cureus, 16(7). https://doi.org/10.7759/cureus.64299

Hassnain, S., Latif, M. N., Arshad, M. H., Adil, M. A., & Shahid, N. (2023). Association of text neck pain with prolonged studying and excessive smart phone usage among medical students. Journal of Bahria University Medical and Dental College, 13(01), 29-33. https://doi.org/10.51985/jbumdc202263

Hawamdeh, M., Al-Nassan, S. M., Obaidat, S. M., Shallan, A., Hawamdeh, Z. M., Eilayyan, O., ... & Alanazi, F. (2023). The relationship between using smartphones and text neck syndrome in online learning among university students in Jordan: A Survey Study. Ortopedia Traumatologia Rehabilitacja, 25(6), 315-320. https://doi.org/10.5604/01.3001.0054.2883

Hilmi, A. H., Hamid, A. R. A., & Ibrahim, W. A. R. A. W. (2024). Recent Advances in Ergonomic Posture Research: Assessing Innovations in Occupational Health and Musculoskeletal Disorder Prevention. Deleted Journal, 6, 76–89. https://doi.org/10.58915/mjer.v6.2024.1310

Irudayaraj, J. I. (2022). Text neck syndrome in undergraduate health science students from a university in the Western Cape: A crosssectional study. https://doi.org/10.1371/journal.pone.0161126

Isik, K., Morkavuk, G., & Odabasi, Z. (2022). Dropped Head Syndrome As a Presenting Sign of Different Diseases: Report of Three Cases. Nöropsikiyatri Arşivi, 60(2), 185–187. https://doi.org/10.29399/npa.28007

Ito, H., & Okamoto, H. (2020). Dropped head syndrome due to vertebral metastasis of breast cancer. Neurology and Clinical Neuroscience, 8(5), 340–341. https://doi.org/10.1111/NCN3.12412

Ivanovski, T., Dávila González, P., Olivé Plana, M., & Miralles Morell, F. (2021). Dropped head syndrome as initial and predominant manifestation of inflammatory myopathy. Case Reports, 14(6). https://doi.org/10.1136/BCR-2019-233385

Jiang, Y.-P., & Liu, N. (n.d.). Dropped Head Syndrome and Axial Myopathy. https://doi.org/10.3969/j.issn.1008-0678.2006.02.019

Kamaraj, N., Rajasekar, V. D., & Rangasamy, S. (2022). A study on prevalence of text neck syndrome among under-graduate students of a medical college in Puducherry. International Journal of Community Medicine and Public Health, 9(7), 2919-22. https://doi.org/10.18203/2394-6040.ijcmph20221759

Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: advancing the methodology. Implementation science : IS, 5, 69. https://doi.org/10.1186/1748-5908-5-69

Lorenzoni, P. J., Lange, M. C., Kay, C. S. K., Almeida, L. G. M. P. de, Teive, H. A. G., Scola, R. H., & Werneck, L. C. (2006). Síndrome da cabeça caída em doença do neurônio motor. Arquivos De Neuro-Psiquiatria, 64(1), 118–121. https://doi.org/10.1590/S0004-282X2006000100024

Martin, A. R., Reddy, R. R., & Fehlings, M. G. (2011). Dropped head syndrome: diagnosis and management. Evidence-Based Spine-Care Journal, 2(2), 41–47. https://doi.org/10.1055/S-0030-1267104

McGowan, J., Sampson, M., Salzwedel, D. M., Cogo, E., Foerster, V., & Lefebvre, C. (2016). PRESS peer review of electronic search strategies: 2015 guideline statement. Journal of Clinical Epidemiology, 75, 40–46. https://doi.org/10.1016/j.jclinepi.2015.12.005

Monga, S., Kamra, I., & Parsa, M. M. (2025). Effectiveness of Neck Stability Exercises and Neck Isometric Exercises on Non-Specific Neck Pain Among Collegiate Students: A Randomized Controlled Trial. International Journal of Scientific Research. 14(1), 25-26 https://doi.org/10.36106/ijsr/3108935

Okubo, S., Kainaga, M., Tokushige, S., Uchibori, A., Oishi, C., Hirano, T., & Ichikawa, Y. (2024). Dropped head syndrome in anti-MuSK antibody-positive myasthenia gravis with possible concurrent axial myopathy. Clinical and Experimental Neuroimmunology. https://doi.org/10.1111/cen3.12782

Paleti, S. T., Inuganti, R., Krishna, S. G., & Islam, R. (2024). A cross-sectional study to estimate the prevalence of text neck syndrome among medical students in a tertiary care teaching hospital in Andhra Pradesh. MRIMS Journal of Health Sciences, 10-4103. https://doi.org/10.4103/mjhs.mjhs_120_23

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. JBI evidence synthesis, 18(10), 2119–2126. https://doi.org/10.11124/JBIES-20-00167

Rahimizadeh, A., Hamidifar, M., Soheili, A., & Rahimizadeh, A. (2015). Dropped Head syndrome, late Complication of Radiotherapy for Nasopharyngeal Carcinoma. https://www.researchgate.net/profile/Mahdi_Hamidifard/publication/276847879_Dropped_Head_syndrome_Late_Complication_of_Radiotherapy_for_Nasopharyngeal_Carcinoma/links/555a510408ae6943a877cd4b.pdf

Raihan, H. A., & Rahman, F. (2023). Effect of Ergonomic Levels on Text Neck Syndrome Among Students: A Correlational Study. Jurnal Kesehatan, 301–308. https://doi.org/10.23917/jk.v16i3.2724

Rashid, A., Sahry, S., Tabasum, H., Farooq, M., Ali, Z., & Younas, M. W. (2024). Prevalence of Text Neck Syndrome and its Association with Forward Head Posture and Aerobic Capacity Among Medical Students. 2(2 (Health&Allied)), 23–28. https://doi.org/10.71000/ijhr77

Salameh, M. A., Boyajian, S. D., Amaireh, E. A., Jamal, B. T., Alrfooh, H. H., Abukhalaf, K., Alzubi, O. A., Al-Tanbouz, H. D., & Alzyoud, K. (2024). Prevalence of text neck syndrome, its impact on neck dysfunction, and its associated factors among medical students: A cross-sectional study. Work-a Journal of Prevention Assessment & Rehabilitation, 1–9. https://doi.org/10.3233/wor-230678

Shahzad, Y., Mehmood, F., Sarwar, S., Ramooz, K., Akhtar, N., Akram, A., ... & Javed, S. (2023). The Text Neck Epidemic: Unveiling the Hidden Burden of Neck Pain among Medical Students. Pakistan Journal Of Neurological Surgery, 27(3), 174-181. https://doi.org/10.36552/pjns.v27i3.898

Sirajudeen, M. S., Alzhrani, M., Alanazi, A., Alqahtani, M., Waly, M., Unnikrishnan, R., Muthusamy, H., Alrubaia, W., Alanazi, N., Seyam, M. K., Kashoo, F., Miraj, M., Channmgere Govindappa, S., Alghamdi, K. A., & Al-Hussinan, N. M. (2022). Prevalence of text neck posture, smartphone addiction, and its association with neck disorders among university students in the Kingdom of Saudi Arabia during the COVID-19 pandemic. PeerJ, 10, e14443. https://doi.org/10.7717/peerj.14443

Soetomo, C. T., Primayanti, I. D. A. I. D., & Sundari, L. P. R. (2022). The Correlation Between Posture, Duration of Gadget Usage and Physical Activity during COVID-19 Pandemic to The Occurrence of Neck Pain among Medical Students in Udayana University. Sport and Fitness Journal, 10(1), 37. https://doi.org/10.24843/spj.2022.v10.i01.p06

Taniguchi, K., Okino, I., Yamamoto, N., Matsumoto, S., Tachibana, N., & Hamano, T. (2011). Two cases with dropped head syndrome caused by hypokalemic myopathy. Rinshō Shinkeigaku Clinical Neurology, 51(2), 110–113. https://doi.org/10.5692/CLINICALNEUROL.51.110

Tricco, A. C., Lillie, E., Zarin, W., O'Brien, K. K., Colquhoun, H., Levac, D., Moher, D., Peters, M. D. J., Horsley, T., Weeks, L., Hempel, S., Akl, E. A., Chang, C., McGowan, J., Stewart, L., Hartling, L., Aldcroft, A., Wilson, M. G., Garritty, C., Lewin, S., … Straus, S. E. (2018). PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. Annals of internal medicine, 169(7), 467–473. https://doi.org/10.7326/M18-0850

Uemura, M., Kosaka, T., Shimohata, T., Ishikawa, M., Nishihira, Y., Toyoshima, Y., Yanagawa, K., Kawachi, I., Takahashi, H., & Nishizawa, M. (2013). Dropped head syndrome in amyotrophic lateral sclerosis. Amyotrophic Lateral Sclerosis, 14(3), 232–233. https://doi.org/10.3109/17482968.2012.727424

Varghese, N., Chandraghosh, V. K. D., Menon, D., Kattadimmal, A., Abdurahiman, P., Mathew, J., & Shobika, B. S. (2024). Neck Extensor Myopathy- A Treatable Cause of Dropped Head Syndrome.

https://doi.org/10.21203/rs.3.rs-4327338/v1

Younes, F., Halawi, G., Jabbour, H., El Osta, N., Karam, L., Hajj, A., & Rabbaa Khabbaz, L. (2016). Internet Addiction and Relationships with Insomnia, Anxiety, Depression, Stress and Self-Esteem in University Students: A Cross-Sectional Designed Study. PloS one, 11(9), e0161126. https://doi.org/10.1371/journal.pone.0161126

Zhang, C., Zhang, J., & Yang, G. (2023). Association between internet addiction and the risk of upper cross syndrome in Chinese college students: A cross-sectional study. Medicine, 102(30), e34273. https://doi.org/10.1097/MD.0000000000034273