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LETTER

Translating Patient Experiences Into Multimethod Assessment and Evidence-Based Care: Next Steps in Research on Sleep Disturbance in Acute Leukemia [Letter]

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Dear editor

Sleep difficulties and the resulting reduction in physical activity due to diminished energy reserves are key contributors to cancer-related fatigue in leukemia patients, adversely affecting chemotherapy tolerance and survival outcomes.[1] A deeper understanding of the lived experience of sleep problems in this population is therefore clinically significant. We read with interest the recent qualitative study by Yu et al,[2] which explored the perceptions of sleep disturbances among young and middle-aged adults with acute leukemia undergoing chemotherapy. Their work provides valuable insights for nursing practice in hematological malignancies. Building on their findings, we propose three constructive suggestions to enhance methodological rigor and inform a future research agenda in this field.

The "Subjective-Subjective Disparity": An Opportunity to Refine Sleep Measurement

A notable observation from Yu et al's study is the misalignment between certain patients' Pittsburgh Sleep Quality Index (PSQI) scores (eg, N2 had a PSQI score of 10 points; N10 had a score of 12 points) and their detailed narratives of shallow, non-restorative sleep. The authors characterized this as "a significant disparity between subjective sleep expectations and objective assessments".[2] It is important to clarify that the PSQI is a validated self-reported instrument generating a composite measure of subjective sleep quality,[3] rather than an objective metric. Objective sleep parameters —such as sleep onset latency, sleep efficiency, and wake after sleep onset—are typically assessed via polysomnography or actigraphy.[4]

Nevertheless, the authors' identification of a "subjective-subjective disparity" between standardized questionnaire results and nuanced patient reports represents a compelling phenomenon and a significant opportunity for methodological refinement.

First, to our knowledge, the concordance between subjective and objective sleep measures has not been thoroughly studied in patients with acute leukemia during chemotherapy. Investigating this gap is promising, as similar discrepancies are well-documented in secondary insomnia associated with conditions such as Alzheimer's disease, chronic fatigue syndrome, and major depressive disorder.[5] Importantly, in acute leukemia, such discrepancies likely reflect a clinically relevant feature of sleep disturbances rather than measurement error, with potential implications for treatment and symptom management.[6]

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Second, the "subjective-subjective disparity" highlighted by Yu et al suggests that the PSQI alone may be inadequate for capturing the specific experience of shallow and non-restorative sleep in this population. We recommend that future studies adopt multimethod assessments, combining the PSQI (or sleep diaries) with polysomnographic measures and in-depth qualitative interviews focused on sleep depth and restorativeness. Triangulating these data sources would improve the conceptualization and measurement of high-quality sleep from the patient's perspective, ultimately supporting the development of patient-centered sleep management strategies for acute leukemia during chemotherapy.

Beyond Correcting Expectations: Reinterpreting the Longing for Deep Sleep

Yu et al documented a widespread patient desire for "deep sleep" contrasting sharply with their lived experience. The authors interpreted this as an "unrealistically high expectation" potentially exacerbating distress and recommended cognitive-behavioral therapy (CBT) to correct this bias.[2]

We propose an alternative, more empowering interpretive lens. Rather than simplistically framing it as "a cognitive distortion," we suggest that for patients, this longing for deep sleep may more accurately reflect an instinctive and legitimate need for the "normalization of physiological rhythms"[7] and "regaining a sense of bodily integrity and control"[8] under conditions of vulnerability.

This reconceptualization leads to an expanded two-stage clinical intervention framework:

First, prioritize sleep-enhancing strategies aimed at approximating patients' physiological needs. This includes optimizing symptom control (eg, night sweats noted by Yu et al) and mitigating environmental disruptions (responding to 88% dissatisfaction reported in their study). Additionally, evidence-based non-pharmacological strategies (eg, sleep hygiene, relaxation techniques) can be taught—directly responding to Yu et al's finding that 69% of patients had unmet sleep management needs.[2]

Second, reposition CBT as an adjunctive intervention. Once physiological and environmental factors have been addressed, CBT may be more effectively applied to manage residual sleep-related anxiety/depression and rumination. The objective thus shifts from correcting expectations to supporting emotional regulation surrounding residual sleep problems.

We believe this "physiological-environmental optimization first, psychological support second" sequential model may offer a more ethically grounded and comprehensive framework for patient care.

From Static Taxonomy to Dynamic Modeling: Implementing the Biopsychosocial Framework Dynamically

Yu et al applied the biopsychosocial model to categorize factors shaping perceived sleep disturbances among patients with acute leukemia during chemotherapy into "biological" "psychological" and "social" domains, offering a valuable multifactorial overview.[2] Yet, their rich qualitative data also suggest dynamic interplays and interdependencies across these factors.

For instance, participants' descriptions of "heavy economic pressure" and "feeling isolated and stressed" due to "insufficient social support" reflect both social and psychological dimensions. This illustrates how external social stressors are internalized as psychological distress, which in turn exacerbates sleep disturbances. Such cross-dimensional reciprocity lies at the conceptual core of the biopsychosocial model.[9]

We thus urge future studies to build on such data by transitioning from static categorizations toward dynamic process modeling. This could be pursued through longitudinal mixed-methods designs: repeated qualitative interviews can trace temporal interactions among factors, followed by quantitative approaches such as psychometric network analysis[10] or cross-lagged panel modeling[11] in larger samples to test the strength and direction of these pathways. Such efforts could identify central drivers within these networks, thereby supporting the development of sequential, multi-target precision interventions aimed at disrupting the vicious cycle of "Social Stress (social-dimension)-Psychological Distress (psycho-dimension)-Sleep Disturbance (bio-dimension)."

Conclusion and Future Vision

In summary, we thank Yu et al for their work, which provides a foundational map of the multifactorial nature of sleep disturbances in acute leukemia. Our commentary seeks to chart the next phase of this exploration by proposing a shift in measurement paradigms, clinical interpretation, and analytical frameworks.

Moving forward, the field is poised to transition from identifying factors to modeling their dynamic interactions, and from correcting patient perceptions to empowering them through systemic support. Embracing this complexity—through mixed-methods designs, patient-centered outcomes, and advanced modeling—will be crucial for developing the precise, effective, and humane sleep intervention strategies for this vulnerable population, with the aim of significantly improving their quality of life during chemotherapy.

Abbreviations

CBT, Cognitive-Behavioral Therapy; PSQI, Pittsburgh Sleep Quality Index.

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