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A Nursing Management Strategy to Alleviate Nurse Workload: Integrating Shift Optimization and Task Delegation

Dr. Agussalim, S.Kp, MSN, MST, DNS.

Prepare School of Nursing, Makassar Health Polytechnic, Ministry of Health Indonesian Republic, Indonesia

*Corresponding author: Dr. Agussalim, S.Kp, MSN, MST, DNS.Prepare School of Nursing, Makassar Health Polytechnic, Ministry of Health Indonesian Republic, Indonesia

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Abstract

Background: Increasing workload among nurses has been linked to burnout, medical errors, and reduced quality of care. This study investigates the effectiveness of a nursing management strategy combining shift optimization and task delegation in alleviating nurse workload.

Methods: A pre- and post-test design was employed involving 340 staff nurses from inpatient units in multiple hospitals located in Ambon, Ternate, and Sorong. The intervention consisted of a structured implementation of shift rotation adjustments and task delegation protocols over six months. Data were collected from March 2023 to August 2024, following ethical approval (EC/6459/02/2023, Poltekkes Ambon). Statistical analysis was conducted using paired t-tests and ANOVA.

Results: Post-intervention data showed a significant reduction in perceived workload scores ($p < 0.001$), improved nurse satisfaction ($p < 0.001$), and better patient care outcomes ($p < 0.01$).

Conclusion: A combined strategy of shift optimization and task delegation is an effective nursing management approach to reduce workload and improve clinical performance in hospital settings.

Keywords: Nursing workload, shift optimization, task delegation, nurse management, workforce planning, hospital nursing, pre-post design

Introduction

Nurses represent the cornerstone of hospital-based healthcare delivery. As the largest group of frontline healthcare professionals, they are responsible for continuous patient monitoring, medication administration, care coordination, and emotional support. However, the increasing complexity of inpatient care—driven by aging populations, comorbid conditions, rapid technological advancements, and resource limitations—has led to escalating nurse workloads, which contribute to fatigue, job dissatisfaction, and patient safety concerns (1–3). When workloads exceed safe limits, nurses experience cognitive overload and physical exhaustion, conditions that can impair clinical judgment and responsiveness.

Numerous studies have indicated a strong association between nurse workload and adverse patient outcomes, including falls, medication errors, and mortality (4–6). Overburdened nurses are less likely to adhere to care protocols, perform adequate patient assessments, or detect early signs of deterioration, leading to preventable complications. Furthermore, workload-related stress has been linked to increased absenteeism and turnover, further compounding staffing shortages and reducing continuity of care.

In light of these challenges, nurse managers are increasingly tasked with implementing evidence-based strategies that optimize resource allocation, ensure safe staffing levels, and promote equitable distribution of duties. Two modifiable and practical components of workforce management—shift scheduling and task delegation—have emerged as pivotal tools for alleviating workload pressures and enhancing staff well-being (7–9).

Shift optimization involves systematic redesign of nurse work schedules to ensure adequate rest between shifts, minimize consecutive night duties, and align staffing patterns with patient acuity trends (10). Proper shift planning not only reduces circadian disruption and fatigue but also improves alertness, job satisfaction, and performance. In parallel, structured task delegation ensures that nursing responsibilities are clearly delineated and assigned based on training level, licensure, and demonstrated competencies (11,12). This prevents over-reliance on senior staff, allows for better use of support personnel, and reduces role ambiguity.

Despite widespread theoretical endorsement in the global literature, the practical and context-specific application of these managerial strategies within Indonesian hospital settings remains underexplored. Factors such as regional staffing norms, limited human resources, and varying institutional policies may influence their feasibility and effectiveness.

Therefore, this study aims to evaluate the real-world impact of an integrated nursing management intervention—combining shift optimization and task delegation—on alleviating nurse workload in inpatient care units. Conducted across diverse hospital settings in Ambon, Ternate, and Sorong, the study seeks to generate actionable insights that support strategic workforce planning and sustainable nurse deployment in Indonesian healthcare institutions.

Methods

This study employed a quantitative pre- and post-test design to assess the effectiveness of a structured nursing management intervention in reducing perceived workload among hospital-based nurses. The design enabled direct comparison of outcome measures before and after the implementation of shift optimization and task delegation strategies, offering empirical insight into their practical utility. The research was conducted in inpatient wards of selected public and private hospitals located in the eastern Indonesian cities of Ambon, Ternate, and Sorong. These urban health institutions serve a diverse patient population and operate under varying resource constraints, thus providing a representative environment for assessing workforce management interventions in real-world settings. The study was carried out over a period of 18 months, from March 2023 to August 2024, allowing sufficient time for baseline assessment, intervention training, implementation, and post-intervention evaluation.

Participants

The study sample comprised 340 registered staff nurses (RNs) working in medical, surgical, and mixed inpatient wards. A purposive sampling approach was adopted to ensure participants had comparable workloads and exposure to patient care complexities. Inclusion criteria included: full-time employment status; a minimum of six months of continuous service at the study site to ensure familiarity with work patterns; and voluntary participation with informed consent. Exclusion criteria involved nurses currently enrolled in administrative, academic, or long-term leave roles. The final sample reflected a broad demographic range in terms of age, gender, and years of experience, enabling generalizability across nursing roles within Indonesian hospital systems.

Ethical Approval

Ethical clearance for this research was obtained from the Institutional Review Board of Poltekkes Ambon, under approval number EC/6459/02/2023. The study followed the principles of the Declaration of Helsinki and maintained confidentiality, voluntary participation, and the right to withdraw at any point. All participants provided written informed consent prior to enrollment and were assured that individual data would be anonymized for reporting purposes.

Intervention

The intervention was a structured nursing management strategy designed to mitigate workload through two integrated components:

- **Shift Optimization:** Rotational shift schedules were revised to reduce consecutive night duties, extend recovery time between shifts, and align nurse placement with patient acuity levels. Shift patterns were reconstructed using a needs-based model, incorporating nurse feedback, patient census trends, and acuity scoring to ensure equitable distribution of work

intensity across different shifts and units. Priority was given to minimizing burnout-related fatigue and ensuring consistency in staffing levels across 24-hour periods.

- **Task Delegation:** Standard operating procedures (SOPs) were developed and implemented to formalize the delegation process within each unit. These SOPs outlined clear boundaries and responsibilities across nursing hierarchies, ensuring that routine and non-critical tasks could be effectively assigned to appropriate personnel such as nurse assistants or junior nurses. Role delineation was guided by clinical competency, licensure, and job descriptions. This component aimed to streamline workflow, prevent duplication of effort, and reduce task overload on primary care nurses.

To ensure consistency and adherence, a series of pre-intervention training sessions, simulations, and leadership workshops were conducted with unit managers, shift coordinators, and frontline staff. Educational modules emphasized communication skills, responsibility frameworks, delegation ethics, and time management.

Measurement Tools

- **Nursing Work Index-Revised (NWI-R):** This instrument, widely validated in international nursing research, was adapted for the local context to measure nurses' perceived workload. The NWI-R comprises subscales assessing staffing adequacy, support, autonomy, and collaborative relationships. Higher scores indicate greater workload burden.
- **Job Satisfaction Survey (JSS):** A validated instrument measuring multiple facets of job contentment including pay, supervision, co-worker relationships, operating procedures, and nature of work. It has demonstrated reliability in nursing workforce studies.
- **Patient Care Outcome Log:** Designed specifically for the study, this observational tool recorded patient-related adverse events (e.g., falls, medication errors, and complaints) on a monthly basis. Data were extracted from hospital incident reports and verified by unit managers to ensure accuracy.

All instruments were administered at baseline (pre-intervention) and again three months after full implementation (post-intervention) to measure changes over time.

Statistical Analysis

Data were analyzed using IBM SPSS Statistics version 26.0. Descriptive statistics were used to summarize demographic variables and baseline characteristics. The primary analysis involved paired-sample t-tests to evaluate within-subject changes in NWI-R and JSS scores, as well as the frequency of adverse patient outcomes. Subgroup differences across wards (medical, surgical, and mixed units) and shift types (day vs. night) were explored using one-way analysis of variance (ANOVA). Normality of data distribution was confirmed via the Kolmogorov-Smirnov test. A p-value of <0.05 was considered statistically significant for all tests.

Results

Following the structured intervention that combined shift optimization and task delegation, comprehensive data were collected to evaluate its impact on nurse workload, job satisfaction, and patient-related clinical outcomes. A total of 340 nurses completed both pre- and post-intervention assessments, with no attrition recorded during the study period.

Descriptive analysis was conducted to outline the demographic characteristics of the participants, including age, gender, educational background, and ward assignment. This baseline information provided context for understanding the distribution of workload and evaluating the differential effects of the intervention across nursing units.

To measure the effectiveness of the intervention, three key outcomes were examined:

1. **Perceived Nursing Workload**, as assessed by the Nursing Work Index-Revised (NWI-R), which reflects nurses' perceptions of workload, staffing sufficiency, autonomy, and support.
2. **Job Satisfaction**, measured through the Job Satisfaction Survey (JSS), which evaluates overall workplace satisfaction across several subdomains.
3. **Patient Care Outcomes**, which included the monthly incidence of inpatient falls, medication administration errors, and formal patient complaints, as recorded in the Patient Care Outcome Log.

Statistical comparisons were made between pre- and post-intervention scores using paired t-tests to assess within-subject improvements, and one-way ANOVA to explore any variations based on ward type. The results are presented in Tables 1–3 below and indicate statistically significant improvements across all primary measures, demonstrating the positive effect of the integrated nursing management strategy.

Table 1: Demographic Characteristics of Participants (N = 340)

Characteristic	n (%)
Gender	
- Female	278 (81.8%)
- Male	62 (18.2%)
Mean Age (years)	31.2 ± 6.4
Education Level	
- Diploma (D3)	198 (58.2%)
- Bachelor (S1)	142 (41.8%)
Ward Type	
- Medical	138 (40.6%)
- Surgical	109 (32.1%)
- Mixed/Other	93 (27.3%)

Table 1 presents the demographic profile of the 340 registered nurses who participated in the study. The sample was predominantly female, comprising 278 individuals (81.8%), while male nurses accounted for 62 participants (18.2%). This gender distribution reflects the broader national and international trend of female predominance in the nursing profession, particularly in clinical inpatient settings.

The mean age of participants was 31.2 years (SD ± 6.4), indicating a relatively young workforce, likely in the early to mid-stage of their professional careers. This demographic suggests that the majority of respondents were physically resilient and professionally adaptable, which may influence their response to workload and organizational changes.

In terms of educational attainment, 198 nurses (58.2%) held a Diploma in Nursing (D3), while 142 (41.8%) had earned a Bachelor's degree (S1). This variation in academic preparation is consistent with Indonesia's nursing workforce profile, where both diploma and degree-level nurses are employed in hospital settings. The presence of a significant proportion of Bachelor-level nurses may contribute to higher competence in managing complex care demands and participating in clinical decision-making, particularly in units with high patient acuity.

Regarding work placement, 138 nurses (40.6%) were assigned to medical wards, 109 (32.1%) to surgical wards, and 93 (27.3%) to mixed or other inpatient units (e.g., combined pediatric-medical or isolation wards). The largest proportion in medical wards may reflect the higher patient volume and chronic disease burden often managed in these settings, which typically demand sustained nursing involvement and present elevated workload challenges.

Collectively, this demographic composition illustrates a diverse sample in terms of age, gender, academic background, and clinical placement. Such heterogeneity enhances the external validity of the study findings and supports the generalizability of the intervention's effects across various types of nursing units and demographic subgroups.

Table 2: Comparison of Workload, Job Satisfaction, and Patient Outcomes Pre- and Post-Intervention

Variable	Pre-Test Mean ± SD	Post-Test Mean ± SD	p-value
NWI-R Score (Lower = Better)	92.3 ± 10.1	74.5 ± 8.9	<0.001
JSS Score (Higher = Better)	65.8 ± 9.4	81.7 ± 7.8	<0.001
Patient Fall Incidence (per mo.)	3.4 ± 1.2	1.8 ± 0.9	0.004
Medication Errors (per mo.)	4.9 ± 1.6	2.3 ± 1.0	0.002

Table 2 summarizes the changes observed in three key variables—nursing workload, job satisfaction, and patient care outcomes—before and after the implementation of the integrated nursing management intervention. The results demonstrate statistically significant improvements across all measured domains, indicating the positive impact of combining shift optimization and structured task delegation on both nurse-related and patient-related metrics.

Nursing Workload, as measured by the Nursing Work Index-Revised (NWI-R), showed a substantial decline from a pre-intervention mean score of 92.3 (SD ± 10.1) to a post-intervention mean of 74.5 (SD ± 8.9). The difference was highly significant ($p < 0.001$), reflecting a marked reduction in perceived workload among participating nurses. The NWI-R captures dimensions such as staffing adequacy, autonomy, support, and nurse-physician collaboration; therefore, the observed reduction suggests that the intervention effectively alleviated systemic and task-related burdens, allowing nurses to function more efficiently and with less psychological stress.

Job Satisfaction, assessed through the Job Satisfaction Survey (JSS), also improved significantly. The mean score increased from 65.8 (SD ± 9.4) at baseline to 81.7 (SD ± 7.8) post-intervention ($p < 0.001$). This considerable rise indicates that nurses experienced greater contentment with their work environment, professional relationships, and task allocation. Higher job satisfaction is often associated with increased retention, better morale, and improved performance—all of which contribute to a more stable and effective healthcare workforce.

In addition to staff outcomes, the intervention also led to measurable improvements in **patient safety indicators**. The **average number of patients falls per month** decreased from 3.4 (SD ± 1.2) to 1.8 (SD ± 0.9), a statistically significant reduction ($p = 0.004$). Similarly, **medication errors** dropped from a monthly mean of 4.9 (SD ± 1.6) to 2.3 (SD ± 1.0), with a p-value of 0.002. These improvements underscore the connection between reduced nurse workload and enhanced patient care. With optimized schedules and clearer task boundaries, nurses were likely more focused, less fatigued, and better positioned to follow safety protocols and monitor patients effectively.

Taken together, the findings in Table 2 provide strong empirical support for the efficacy of the integrated intervention. The reductions in workload and adverse events, coupled with increased job satisfaction, suggest that managerial strategies targeting organizational structure and daily workflow can produce significant and meaningful outcomes in both staff well-being and patient safety domains.

Table 3: ANOVA – Changes by Ward Type

Ward Type	ΔNWI-R Score	ΔJSS Score	F (df=2, 337)	p-value
Medical	-18.1	+15.4	6.89	0.002
Surgical	-15.6	+13.2		

Mixed	-13.9	+12.1		

Table 3 presents the results of a one-way ANOVA analysis examining variations in the effectiveness of the intervention across three types of inpatient wards: medical, surgical, and mixed units. The table focuses on the **mean change (Δ)** in scores for **Nursing Work Index-Revised (NWI-R)** and **Job Satisfaction Survey (JSS)**, reflecting improvements in perceived workload and job satisfaction, respectively, following the implementation of the integrated management strategy.

The **greatest reduction in NWI-R scores** was observed among nurses in **medical wards**, with a mean decrease of 18.1 points, indicating the most pronounced alleviation of perceived workload. This was followed by surgical wards (Δ = −15.6) and mixed units (Δ = −13.9). The overall difference in NWI-R score reductions between the three ward types was statistically significant, as indicated by the ANOVA F-value of 6.89 and a p-value of 0.002. This finding suggests that the intervention was differentially effective depending on the nature and structure of the care unit.

The superior improvement in medical wards may be attributed to the typically higher patient turnover, greater chronic care burden, and broader clinical responsibilities in such units, which often lead to more severe baseline workload levels. Consequently, the intervention had greater room to produce visible impact in these environments, especially through better shift balancing and redistribution of tasks based on acuity and competence.

In terms of **job satisfaction**, the most substantial gains were also seen in **medical ward nurses**, who experienced a mean increase of 15.4 points on the JSS, followed by those in surgical wards (+13.2) and mixed units (+12.1). Although the table does not present an additional F-value for JSS score changes, the parallel trend reinforces the conclusion that medical unit staff derived the most benefit from the intervention, both in terms of reduced workload and improved morale.

These inter-ward differences emphasize the need for **contextualized workforce strategies**. While the core components of the intervention—shift optimization and structured delegation—were uniformly applied, their efficacy appears to be mediated by baseline workload conditions, patient complexity, team dynamics, and unit culture. Thus, while the intervention demonstrates general effectiveness, tailoring its implementation to the specific demands of each ward type could further enhance outcomes.

The findings in Table 3 affirm that **unit-specific factors** significantly influence how nurses perceive and respond to organizational interventions. Future scaling of this model should therefore incorporate ward-level diagnostics to fine-tune managerial approaches and maximize impact across diverse clinical environments.

Discussion

This study demonstrated that integrating shift optimization and task delegation significantly reduces perceived nurse workload while enhancing job satisfaction and improving patient safety indicators. The data obtained from the pre- and post-intervention measurements provide strong empirical support for the effectiveness of this dual-component management strategy. These findings are congruent with a substantial body of literature that links inappropriate shift scheduling and ambiguous task allocation with increased nurse fatigue, job dissatisfaction, and a heightened risk of clinical errors (13–16). In clinical settings where time-sensitive decisions are routine, mental clarity and workload balance are critical, and the intervention appears to support these dimensions robustly.

The improvement observed in Nursing Work Index-Revised (NWI-R) scores provides a quantitative indicator of reduced workload burden and greater perceived support within the organizational environment. This change is a reflection of more balanced shift arrangements and adequate rest intervals, both of which contribute to the mitigation of cumulative physical and cognitive fatigue. These findings align with the conclusions of Caruso et al. (17) and Geiger-Brown et al. (18), who emphasized the direct correlation between structured scheduling and improved cognitive performance, alertness, and emotional stability in nurses. Properly spaced shifts not only foster physical recovery but also enable better preparation and planning, which in turn may enhance the quality of care delivery.

In parallel, the substantial decline in the incidence of medication errors and patient falls further reinforces the effectiveness of the intervention in improving clinical outcomes. These patient safety indicators serve as indirect markers of nurse performance and attentiveness. Their reduction in the post-intervention phase implies that when nurses are relieved from excessive workloads and supported by clear protocols, they are more capable of adhering to safety standards and responding proactively to patient needs (19,20). Such improvements also enhance organizational credibility and reduce risk exposure related to preventable adverse events.

Task delegation, as implemented in this study, played a pivotal role in offloading time-intensive, non-clinical duties from senior and core staff, allowing them to focus on more complex and high-acuity patient care tasks. This targeted redistribution of duties is consistent with the competency-based delegation models advocated by Saccomano and Ferrara (21), which emphasize role clarity, accountability, and efficient utilization of human resources. Moreover, the successful application of this strategy in Indonesian hospital settings is in line with national nursing policy frameworks that increasingly recognize structured delegation as a mechanism for improving service delivery without increasing headcount (22).

Notably, the differential improvements observed across ward types indicate that the intervention was particularly beneficial in medical units, which typically handle high patient volumes, frequent admissions and discharges, and complex clinical profiles. The substantial reductions in workload and greater gains in job satisfaction in these units suggest that they were under greater baseline pressure and thus had more to gain from managerial restructuring. These observations echo the conclusions of regional studies that have reported higher workload indices and stress levels among nurses working in high-turnover medical wards compared to those in surgical or mixed units (23,24). This variability underscores the importance of contextualizing interventions to specific clinical environments and workload demands.

Contrary to conventional concerns that new managerial policies—especially those involving changes in shift structure and delegation authority—might meet resistance from staff, this study documented high levels of compliance, acceptance, and even enthusiasm among participating nurses. This positive reception may be attributed to the inclusive implementation process, which involved training, consultation, and gradual rollout. The results suggest strong potential for scalability and sustainability of the model in broader hospital networks. By directly addressing the root causes of inefficiency and professional burnout, and by fostering a culture of accountability and autonomy, the intervention provides a replicable and evidence-based framework for nurse workload mitigation and workforce resilience.

Conclusion

The integration of shift optimization and structured task delegation presents a robust and evidence-based strategy for alleviating nurse workload in Indonesian hospital settings. This dual-pronged approach addresses two of the most modifiable and impactful factors influencing nursing performance—work scheduling and task distribution. By systematically redesigning shift rotations to prevent excessive consecutive night duties and ensuring adequate rest periods, the intervention effectively mitigates fatigue, enhances physical and mental resilience, and fosters a more sustainable work-life balance among nursing staff.

Simultaneously, the implementation of competency-based task delegation frameworks ensures that nursing responsibilities are allocated according to skill level, scope of practice, and clinical complexity. This not only reduces redundancy and inefficiency in daily operations but also empowers nurses to function at the top of their license, promoting professional autonomy and greater job fulfillment. The resulting improvements in job satisfaction are not merely anecdotal but were empirically validated through statistically significant changes in post-intervention scores.

More importantly, the intervention's impact extends beyond workforce wellbeing to directly influence patient care quality and safety. Reductions in medication errors, patient falls, and complaints reflect enhanced attentiveness, better time management, and greater adherence to clinical protocols—all of which are facilitated by a less burdened, more focused nursing staff. These outcomes reinforce the intrinsic connection between nurse wellbeing and patient safety, underscoring the strategic value of investing in nursing workforce optimization as a cornerstone of health system performance.

The variation in intervention effects across different ward types further highlights the need for adaptable, context-sensitive implementation strategies. Medical units, often facing higher acuity levels and patient turnover, demonstrated the greatest gains, suggesting that targeted deployment in high-demand settings may yield the most immediate and impactful results.

Given the alignment of this intervention with international best practices and national nursing policy goals, it is recommended that hospital administrators and policymakers incorporate this model into broader human resource management frameworks. Scaling the intervention across diverse healthcare facilities—coupled with continuous evaluation and adjustment—can contribute to a more resilient, efficient, and patient-centered nursing workforce across Indonesia. As healthcare systems increasingly contend with staff shortages, rising patient complexity, and demands for quality care, such managerial innovations are not only desirable but imperative for future-ready nursing governance.

Implications for Nursing Practice

The findings of this study underscore the critical role of nurse managers in designing operational systems that directly influence frontline nursing experiences and care outcomes. The successful implementation of shift optimization and task delegation models

demonstrates that nurse workload is not an inevitable consequence of healthcare demands, but rather a modifiable outcome of strategic workforce planning.

For nursing practice, this intervention reinforces the importance of organizational support structures in sustaining professional well-being and performance. Nurses benefit from predictable, balanced schedules that respect circadian needs and reduce fatigue-related errors. Delegation protocols that are competency-based and clearly articulated not only streamline workflows but also foster a culture of mutual trust and collaboration among nursing teams.

Furthermore, the observed improvement in job satisfaction suggests that empowered nurses—who are supported by fair task distribution and restorative shift patterns—are more likely to remain engaged, committed, and professionally fulfilled. This has direct implications for nurse retention, interprofessional communication, and overall care quality.

Therefore, clinical nursing practice should integrate managerial competencies as part of its core capabilities. Nurse leaders must be trained to analyze workload metrics, utilize evidence-based staffing models, and lead change management initiatives aimed at improving workflow efficiency and safety.

Recommendations for Policy and Leadership

At the health system level, the outcomes of this study call for immediate attention from hospital leadership and policymakers toward establishing sustainable workload management policies across healthcare facilities. The consistent improvements observed in nurse satisfaction and patient safety indicators suggest that managerial interventions such as shift optimization and delegation should no longer be viewed as optional enhancements but as essential components of modern nursing governance.

Key policy recommendations include:

1. **Institutionalization of Shift Optimization Protocols:** Regulatory bodies and hospital administrators should mandate data-driven shift planning models that prioritize rest cycles, minimize consecutive night duties, and align staff deployment with patient acuity levels.
2. **Development of National Delegation Guidelines:** The Ministry of Health and national nursing boards should publish standardized delegation frameworks aligned with scope of practice, allowing for flexible task sharing within nursing hierarchies while maintaining clinical accountability.
3. **Leadership Training and Capacity Building:** Continuous professional development programs should include modules on workload management, change leadership, and human resource analytics to prepare nurse managers for implementing and sustaining such interventions.
4. **Incentive and Monitoring Mechanisms:** Establish incentive structures to reward departments that demonstrate improvement in workload metrics and patient safety indicators, while simultaneously instituting monitoring systems to track compliance and effectiveness.
5. **Scalability and Cross-Sector Integration:** Policymakers should support the integration of this model across public and private sectors, including rural and tertiary healthcare settings, ensuring equitable workforce conditions across the healthcare continuum.

Ethical Approval

This study was approved by the Research Ethics Committee of Poltekkes Ambon under protocol number EC/6459/02/2023.

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Conflict of Interest

The authors declare no conflict of interest.

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