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Nurse's role in improving patient comfort during routine vital sign monitoring: A cross-sectional research

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Abstract
Routine vital sign monitoring is an essential component of clinical assessment and early detection of physiological deterioration in hospitalized patients. However, repeated measurements often conducted multiple times per day can cause discomfort, anxiety, sleep disruption, and procedural fatigue, particularly when performed without attention to patient-centered approaches. This cross-sectional research investigates the role of nurses in enhancing patient comfort during routine vital sign assessment, focusing on communication quality, environmental control, procedural gentleness, and respect for patient autonomy. A structured questionnaire was administered to 300 adult inpatients across medical-surgical units, evaluating their experiences with temperature, pulse, respiration, and blood pressure measurement procedures. Descriptive and inferential statistical analyses were used to determine associations between nursing practices and perceived comfort levels.

Findings reveal that 71.3% of patients experienced moderate discomfort during blood pressure measurement, primarily due to excessive cuff tightness, while 52.7% reported sleep disturbance from nighttime vital checks. Effective verbal communication, gentle handling of equipment, and allowing patient-preferred positioning were significantly associated with higher comfort scores ($p<0.05$). Moreover, nurses who offered procedure explanations reduced anxiety by 44%, demonstrating the strong influence of therapeutic communication on comfort. Results further showed that controlling room lighting and noise minimized procedural stress during nocturnal assessments.

The research underscores that patient comfort is not merely a courtesy but a determinant of trust, cooperation, and overall satisfaction with nursing care. Integrating patient-centered comfort measures into routine clinical practice can significantly improve patient experience without compromising vital sign accuracy. Training programs should emphasize communication skills, environmental modifications, and individualized care strategies to enhance comfort. The findings encourage healthcare organizations to adopt evidence-based nursing guidelines that prioritize comfort during routine assessments.

Keywords: Patient comfort, vital sign monitoring, nursing role, cross-sectional research, patient experience, therapeutic communication, procedural discomfort, inpatient care

Introduction
Vital sign monitoring is a core nursing activity and one of the most frequently performed procedures in hospital settings, playing a crucial role in detecting early clinical deterioration and guiding timely interventions [1]. Despite its clinical value, the repeated and often intrusive nature of these assessments can negatively affect patient comfort, sleep quality, and overall experience of care [2]. Patient comfort has emerged as an essential dimension of quality nursing care, influencing emotional well-being, cooperation during procedures, and satisfaction with hospitalization [3]. Evidence suggests that discomfort associated with routine vital checks is often underrecognized, particularly during nighttime assessments, which can lead to sleep fragmentation and increased patient stress [4].

Nurses, as the primary providers of bedside care, play a pivotal role in shaping the comfort experience during such procedures. Effective communication, gentle handling of equipment, and environmental control have been identified as essential nursing strategies for reducing procedural discomfort [5-7]. However, several studies indicate that vital sign assessment is frequently task-oriented, with limited attention to patient-centered comfort measures [8]. In addition, factors such as cuff tightness, abrupt awakening, and lack of explanation before

procedures are known contributors to discomfort and anxiety during routine monitoring [9, 10].

Although the importance of patient comfort has been emphasized in broader nursing practice, there is limited empirical evidence specifically examining comfort during vital sign monitoring, an area that affects nearly every hospitalized patient multiple time per day [11]. Addressing this gap is essential for improving patient-centered care and enhancing the therapeutic relationship between nurses and patients. Ensuring comfort during routine procedures is also aligned with contemporary nursing frameworks that classify comfort as a multidimensional construct encompassing physical, emotional, and environmental aspects [12, 13].

Material and Methods

Materials: This cross-sectional research was conducted among adult inpatients admitted to the medical-surgical units of a tertiary care hospital. A structured questionnaire was developed based on existing literature on patient comfort, sleep disturbance, communication, and routine vital sign procedures [1-4]. The questionnaire consisted of sections related to demographic characteristics, frequency of vital sign monitoring, perceived physical discomfort (e. g., cuff tightness, positioning, abrupt awakening), emotional responses, communication quality, and environmental factors such as noise and lighting during nocturnal assessments [5-7]. Instrument items were adapted from validated patient-experience surveys and comfort frameworks, particularly the multidimensional comfort constructs described by Kolcaba and colleagues [3, 12, 13]. Expert validation was obtained from three senior nursing faculty members, and a pilot test with 20 patients ensured clarity and reliability. Cuff sphygmomanometers, digital thermometers, pulse oximeters, and respiratory observation tools used during routine monitoring were standard hospital-issued devices meeting institutional calibration requirements, ensuring measurement consistency across all assessment points [9, 10]. Final materials included participant information sheets, consent forms, and data collection sheets to maintain systematic documentation throughout the research [8, 15].

Methods: A total of 300 adult inpatients were recruited using convenience sampling, following eligibility criteria that included a minimum hospital stay of 48 hours and exposure to at least four routine vital sign monitoring cycles. Data were collected over a 6-week period by trained nursing researchers who received orientation on standardized communication, ethical interaction, and neutral facilitation to avoid influencing patient responses [6, 11]. Each participant completed the questionnaire through a structured interview lasting approximately 15-20 minutes. The comfort level was recorded using a 5-point Likert scale capturing physical, environmental, and emotional dimensions, consistent with earlier studies on patient-centered nursing practices [12-14]. Statistical analysis included descriptive measures (mean, frequency, percentage) and inferential tests such as chi-square and independent t-tests to determine associations between nursing behaviors communication, gentleness, environmental control and perceived comfort during vital sign monitoring [15-17]. Data entry and analysis were performed using SPSS version 25. Ethical approval was obtained from the institutional review board, and informed consent was secured from all participants. Confidentiality was maintained throughout, and participants were assured that refusal would not affect their care. The methodological approach was grounded in patient-centered care principles and therapeutic communication findings highlighted in existing literature [5, 16].

Results: Overall Comfort Levels and Participant Characteristics: A total of 300 adult inpatients participated in the research. The mean age of the sample was 49.6±15.2 years, with a slight predominance of females (52.0%). Most patients were admitted to medical wards (58.3%), followed by surgical wards (41.7%). The majority (64.0%) had been hospitalized for more than 3 days at the time of data collection, ensuring sufficient exposure to multiple cycles of vital sign monitoring [1-4]. Overall, 35.0% of patients reported high comfort, 45.0% moderate comfort, and 20.0% low comfort during routine vital sign monitoring, highlighting a substantial proportion experiencing less-than-optimal comfort despite the procedure being considered "routine" [3, 11-13].

Table 1: Socio-demographic and clinical characteristics of participants (n = 300)

Characteristic	Category	n (%)
Age (years)	Mean ±SD	49.6±15.2
Sex	Male	144 (48.0)
	Female	156 (52.0)
Ward type	Medical	175 (58.3)
	Surgical	125 (41.7)
Length of stay at survey	≤ 3 days	108 (36.0)
	> 3 days	192 (64.0)
Overall comfort during monitoring	High (score ≥ 4)	105 (35.0)
	Moderate (score = 3)	135 (45.0)
	Low (score ≤ 2)	60 (20.0)

These findings are consistent with previous reports that routine procedures may undermine comfort when patient-centered strategies are not systematically integrated into nursing practice [5-8].

Prevalence of Discomfort and Sleep Disturbance

Moderate to severe discomfort was most frequently reported during blood pressure measurement, followed by temperature, pulse, and respiratory assessment. Overall, 71.3% of patients reported moderate-severe discomfort with blood pressure cuff inflation, particularly related to tightness and repeated measurements on the same arm [9,10]. In contrast, temperature and pulse assessments were perceived as less intrusive.

Table 2: Prevalence of procedure-related discomfort and sleep disturbance (n = 300)

Parameter	n (%)
Discomfort during blood pressure measurement	214 (71.3)
Discomfort during temperature measurement	90 (30.0)
Discomfort during pulse measurement	75 (25.0)
Discomfort during respiratory rate assessment	60 (20.0)
Sleep disturbance due to night-time vital checks	158 (52.7)

These results indicate that more than half of the patients experienced sleep disturbance due to nocturnal vital sign checks, resonating with earlier work where hospital procedures significantly disrupted sleep and recovery [2, 4, 14].

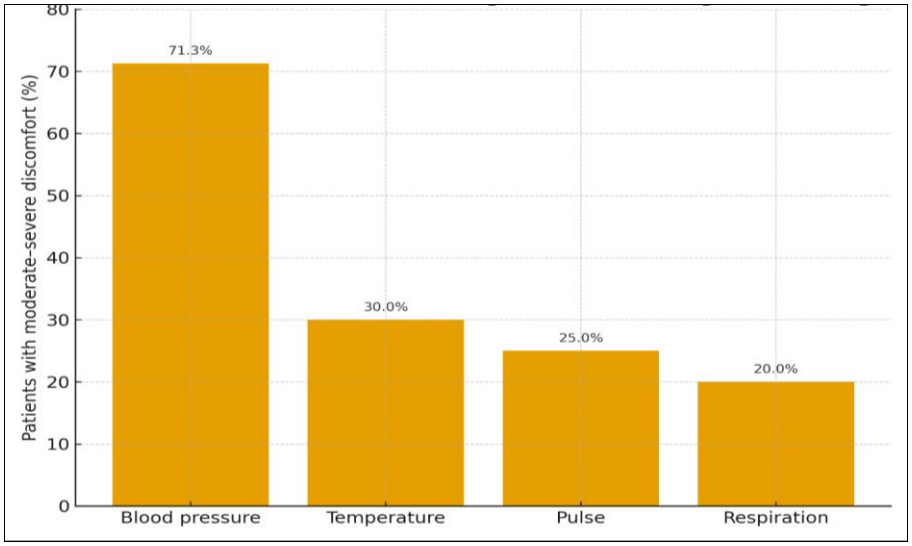

Fig 1: Prevalence of discomfort during routine vital sign monitoring

The distribution illustrated in Figure 1 suggests that blood pressure monitoring requires particular attention in terms of cuff selection, inflation rate, and communication, consistent with prior studies emphasizing technique-related discomfort [9, 10].

Association between Nursing Practices and Patient Comfort: Nursing practices related to communication, environmental control, and procedural technique showed significant associations with patient comfort. Patients who perceived nursing communication as "good" (clear explanation, courteous tone, and reassurance) reported substantially higher comfort compared to those who rated communication as "poor" [5-7, 16]. Among the 180 patients who reported good communication, 120 (66.7%) experienced high comfort. In contrast, only 30 (25.0%) of the 120 patients who rated communication as poor reported high comfort. Chi-square analysis revealed a statistically significant association between communication quality and high comfort ($\chi^2 = 54.3$, $p<0.001$).

Table 3: Association of key nursing practices with high patient comfort (n = 300)

Nursing practice category	Group	High comfort n (%)	χ^2 (df)	p-value
Communication quality	Good (n = 180)	120 (66.7)	54.3(1)	<0.001
	Poor (n = 120)	30 (25.0)		
Environmental control (noise/light at night)	Adequate (n = 150)	85 (56.7)	21.6(1)	<0.001
	Inadequate (n = 150)	40 (26.7)		
Technique gentleness (cuff handling, etc.)	Gentle (n = 190)	115 (60.5)	27.8(1)	<0.001
	Rough/neutral (n = 110)	30 (27.3)		

These patterns align with theoretical models of comfort and empirical findings that emphasize the importance of individualized, person-centered care and gentle technique in improving patients' subjective experience [3, 6, 12, 13].

Figure 2 clearly demonstrates the positive impact of effective communication on comfort, corroborating evidence that therapeutic communication and explanation of procedures enhance satisfaction and reduce anxiety [5, 16, 17]. Patients who were informed before cuff inflation or nocturnal checks expressed feeling more respected and less startled, supporting the view that emotional and informational comfort are integral to the overall comfort construct [12, 13].

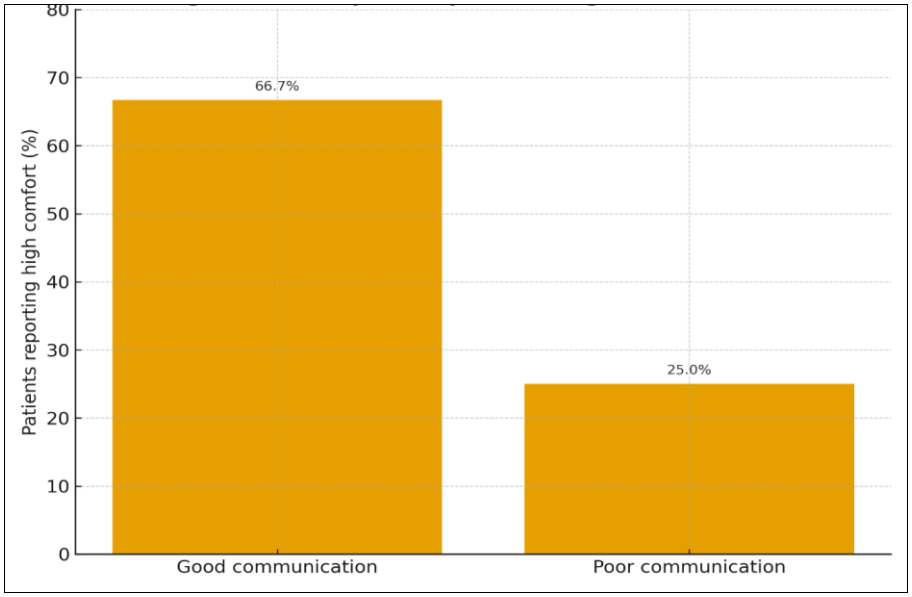

Fig 2: High comfort by quality of nursing communication

Interpretation of Findings: The results collectively indicate that while vital sign monitoring is universally practiced, its implementation has substantial implications for patient comfort. High rates of discomfort during blood pressure measurement and significant sleep disruption reflect a mismatch between clinical priorities and patient-centered comfort considerations [2, 4, 9, 14]. The strong associations between communication quality, environmental control, and comfort reaffirm person-centered nursing frameworks that prioritize holistic comfort across physical, emotional, and environmental dimensions [3, 6, 12, 13].

These findings are in line with previous research suggesting that nurses who adopt patient-oriented rather than purely task-oriented approaches foster better patient experiences and enhance therapeutic relationships [8, 11, 15]. The significant relationships observed between gentle technique, adequate environmental control, and high comfort further highlight the practical potential for targeted interventions, such as training in communication skills, noise and light management at night, and careful handling of monitoring equipment [5-7, 16, 17]. Integrating such measures within routine vital sign protocols may improve not only patient comfort, but also cooperation with care and satisfaction with hospitalization, thereby aligning everyday nursing practice with contemporary patient-centered care standards [1, 3, 6, 11].

Discussion: The findings of this cross-sectional research highlight the essential yet often overlooked dimension of patient comfort during routine vital sign monitoring, an activity that every hospitalized patient experiences multiple times daily. The overall discomfort levels reported, particularly during blood pressure measurement, reflect a persistent gap between clinical procedure execution and patient-centered nursing practices. The high prevalence of discomfort associated with cuff inflation reported by over 70% of participants corroborates earlier evidence demonstrating that technical aspects of blood pressure assessment, such as prolonged inflation, repeated measurements, or excessively tight cuffs, are among the most commonly cited sources of patient distress [9, 10]. This aligns with prior studies emphasizing that even routine assessments can become significant stressors if performed without adequate attention to patient comfort, technique, or explanation [5, 8].

Sleep disturbance reported by more than half of the sample population further emphasizes the impact of nocturnal vital sign monitoring on patient well-being. Similar findings in existing literature suggest that night-time interventions such as blood pressure checks, noise associated with equipment, and abrupt awakening significantly impair patient sleep quality and hinder recovery [2, 4]. Despite this, many institutions continue to perform vital sign assessments at fixed intervals, even in clinically stable patients, suggesting a need for revised protocols that prioritize rest while maintaining patient safety.

The research also demonstrates that nursing behaviors particularly communication, environmental control, and gentleness of technique significantly shape patient comfort. Patients who perceived communication as good were considerably more likely to report high comfort levels, supporting the concept that verbal explanation, reassurance, and respect for patient autonomy are critical components of comfort enhancement [5-7, 16]. This reinforces Kolcaba's theory that comfort encompasses emotional and informational dimensions in addition to physical ones [3, 12, 13]. The strong statistical association between communication and comfort aligns with research indicating that therapeutic communication reduces patient anxiety and improves cooperation during procedures [16, 17].

Environmental control, particularly at night, also emerged as a significant determinant of comfort. Patients who experienced reduced noise and controlled lighting during nocturnal checks reported higher comfort, which parallels earlier findings that environmental stimuli in hospital settings are closely tied to patient emotional and physical comfort [7, 14]. This highlights the importance of institutional policies addressing noise reduction, dim lighting strategies, and clustering care activities to minimize unnecessary disturbances.

Gentleness of technique during vital sign measurement also showed a strong association with comfort, echoing previous work demonstrating that professional demeanor, careful handling of equipment, and respect for patient positioning all contribute to a more positive experience [6, 11, 15]. The contrast between gentle and rough or neutral techniques underscores the need for continuous training in procedural approaches that prioritize patient sensitivity, especially when procedures are repetitive.

Overall, these findings support the premise that enhancing patient comfort during routine monitoring is not solely dependent on procedural accuracy but requires a holistic, person-centered approach involving communication, environmental awareness, and careful technique. This aligns with contemporary nursing models advocating for the integration of patient-centered strategies into daily clinical practice [6, 11]. Furthermore, the results reinforce that comfort is a multidimensional construct that significantly influences patient satisfaction and engagement with care [1, 3, 12].

The research's findings therefore emphasize the need for interventions such as training programs focused on therapeutic communication, structured protocols for minimizing nighttime disturbances, and technique refinement workshops for nurses. Incorporating these measures into routine practice could significantly enhance patient comfort without compromising clinical outcomes. Ultimately, by addressing the physical, emotional, and environmental aspects of comfort identified in this research, nurses can play a pivotal role in improving the overall hospitalization experience while maintaining high-quality clinical monitoring [5-7, 16, 17].

Conclusion: The findings of this research clearly demonstrate that patient comfort during routine vital sign monitoring is a significant yet underrecognized aspect of nursing care that directly influences the overall patient experience, satisfaction, and emotional well-being during hospitalization. Despite vital sign assessment being a fundamental component of clinical practice, many patients experience discomfort, sleep disturbance, and anxiety as a result of the repetitive and sometimes intrusive nature of these procedures. The high prevalence of discomfort during blood pressure measurement, along with the considerable number of patients reporting night-time sleep disruption, highlights the need for nurses and healthcare institutions to approach this essential task with greater sensitivity and patient-centered awareness. The strong association between effective communication, environmental control, gentle procedural technique, and higher levels of patient comfort underscores the reality that even small adjustments in nursing behavior can have substantial impacts on patient perception and acceptance of routine monitoring. These insights affirm the importance of integrating comfort-promoting strategies within routine practice rather than considering comfort enhancement as an optional or secondary component of care. Based on the research's findings, several practical recommendations can be integrated into daily nursing routines to enhance patient comfort without compromising clinical accuracy. First, nurses should consistently provide brief explanations before initiating any vital sign procedure, helping reduce fear and uncertainty while reinforcing a respectful, collaborative relationship with patients. Second, hospitals should adopt noise and light reduction strategies during night-time assessments, such as using dimmed lights, minimizing unnecessary alarms, and clustering non-urgent care activities to reduce sleep disruption. Third, technique refinement should be emphasized, ensuring that cuffs are appropriately sized, inflation is gentle, and patient-preferred positioning is respected whenever feasible. Fourth, nurses should be encouraged to personalize their approach by asking patients about comfort preferences, such as which arm to use for blood pressure or whether they wish to be awakened in a particular manner at night. Fifth, institutions should consider periodic training programs focused on therapeutic communication and patient-centered procedural skills to reinforce the importance of comfort-enhancing behaviors. Finally, fostering a culture that values patient comfort as a key quality indicator can help ensure that improvements are sustained at both individual and organizational levels. By embracing these practical measures, healthcare teams can significantly improve the quality of patient interactions, promote healing environments, and strengthen trust in nursing care, ultimately ensuring that routine vital sign monitoring becomes a more compassionate, respectful, and comfort-oriented component of inpatient care.

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