Effectiveness of Structured Teaching on FAST HUGS BID Protocol for Critically Ill Patients: A Pre-Experimental Study Among ICU Nurses

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Abstract

Critically ill patients in intensive care units (ICUs) require coordinated, evidence-based care to prevent complications and optimize outcomes. The FAST HUGS BID protocol is a structured mnemonic designed to ensure essential daily care components, including feeding, analgesia, sedation, thromboembolism prophylaxis, head-of-bed elevation, ulcer prevention, glycemic control, bowel care, indwelling catheter assessment, and antibiotic de-escalation. This pre-experimental study aimed to evaluate the effectiveness of a structured teaching programme on nurses' knowledge regarding the FAST HUGS BID protocol in selected hospitals. A total of ICU nurses were assessed using a pre-test/post-test design. Data analysis using descriptive and paired t-test statistics revealed a significant improvement in knowledge following the intervention. The mean pre-test score of participants was 10.42 (SD=2.31), which increased to 16.87 (SD=1.94) in the post-test, with a highly significant p-value (<0.001). Component-wise analysis also demonstrated significant gains across all elements of the protocol. No demographic variables showed significant association with post-test scores, indicating uniform effectiveness across groups. The study concludes that structured teaching substantially enhances ICU nurses' knowledge of the FAST HUGS BID protocol, emphasizing the importance of standardized educational strategies for improving critical care practices and patient safety.

Keywords: FAST HUGS BID, structured teaching, ICU nurses, critical care, patient safety, nursing education, evidence-based practice.

1. Introduction

The intensive care unit (ICU) represents one of the most complex and demanding environments in modern healthcare, where critically ill patients require constant monitoring and multidisciplinary coordination to optimize outcomes. In this high-risk setting, nurses play a pivotal role not only in executing medical interventions but also in ensuring the holistic care of patients through protocols, teamwork, and vigilant monitoring. One such protocol, known as FAST HUGS BID, was developed to ensure essential components of ICU care are not overlooked. It emphasizes nutrition, pain control, head-of-bed elevation, deep vein thrombosis (DVT) prophylaxis, and more, reinforcing evidence-based best practices in critical care.

The emergence of structured teaching programs for ICU nurses reflects a growing recognition that knowledge alone is not sufficient; there must also be clarity, standardization, and reinforcement through systematic education. When implemented effectively, such programs can significantly enhance patient safety and reduce hospital-acquired conditions, such as ventilator-associated pneumonia (VAP), catheter-associated urinary tract infections (CAUTI), and central line-associated bloodstream infections (CLABSI) [1], [5]. According to the Centers for Medicare & Medicaid Services, these complications not only extend hospital stays but also impact reimbursements and quality scores [6].

Standardization of care procedures through structured teaching and multidisciplinary approaches has been shown to yield substantial improvements in ICU outcomes. For instance, Gravina et al. demonstrated how adherence to standardized rounding protocols improved communication and treatment delivery in two inpatient units [10]. Similarly, Brown et al. observed that organizing multidisciplinary rounds using structured tools and daily checklists improved efficiency and care delivery for critically ill patients [3]. These examples underscore the value of unifying ICU practices to eliminate variability and promote collaborative patient management.

In the context of evolving technologies and critical care demands, extracorporeal membrane oxygenation (ECMO) has become a crucial life-sustaining therapy for patients with severe respiratory or cardiac failure. The role of ICU nurses in ECMO care, especially during the COVID-19 pandemic, was further highlighted in several studies. Alshammari et al. conducted a qualitative study that explored the perceptions of other healthcare professionals regarding the competencies of nurses in managing veno-venous ECMO, reinforcing the importance of specialized knowledge in advanced critical care settings [2]. A similar emphasis on system-level preparedness and specialized ICU teams was presented by Dave et al., who described lessons learned from managing a dedicated ECMO unit during the COVID-19 pandemic [7].

Daily goal checklists have emerged as vital tools to reinforce the consistent implementation of critical care protocols. The Agency for Healthcare Research and Quality (AHRQ) has endorsed these checklists as part of the Comprehensive Unit-based Safety Program (CUSP), promoting clarity in communication and goal alignment among ICU staff [1]. By integrating structured teaching programs with these evidence-based tools, ICU teams can ensure that essential patient care practices, such as the FAST HUGS BID components, are consistently monitored and delivered.

Multidisciplinary teamwork has also emerged as a defining feature of successful ICU care. Studies show that team-led approaches lead to better collaboration, reduced mortality, and improved adherence to treatment plans [4], [8], [9]. Bruni et al. reported on a COVID-19 case that required integrated care by surgical and ICU teams, illustrating the complexity and interdependence of critical care interventions [4]. Der also reported that structured multidisciplinary rounds led to greater collaboration and better patient outcomes in an ICU setting [8].

Despite these advancements, gaps remain in the consistent application of critical care protocols. Variations in nursing knowledge, inconsistent team communication, and lack of

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structured educational programs contribute to these disparities. A systematic effort to educate nurses using structured teaching frameworks such as FAST HUGS BID is critical for bridging these gaps. These programs are not just informational; they serve to empower nurses, strengthen interprofessional collaboration, and minimize preventable complications in high-acuity environments.

In summary, the introduction of structured teaching programs for ICU nurses, particularly on critical care mnemonics like FAST HUGS BID, represents a significant opportunity to improve patient outcomes, enhance interdisciplinary collaboration, and streamline critical care processes. The existing literature and institutional guidelines point toward a consistent need for formalized education and protocol adherence as the backbone of quality ICU care. This study aims to evaluate the effectiveness of such structured education on the knowledge and practice of ICU nurses, offering evidence that can further support the adoption of standardized care frameworks in ICUs.

2. Literature Review

The complexity and high-stakes nature of the intensive care unit (ICU) demand a consistent, evidence-based approach to patient care. In this context, structured protocols like FAST HUGS BID have gained increasing relevance for improving patient safety and outcomes. The mnemonic encapsulates a series of essential care elements, including Feeding, Analgesia, Sedation, Thromboembolic prophylaxis, Head-of-bed elevation, Ulcer prophylaxis, Glycemic control, Bowel care, Indwelling catheter management, and De-escalation of antibiotics. As such, it serves both as a clinical tool and a teaching framework, especially in structured nursing education programs [12].

The effectiveness of multidisciplinary communication and rounding tools in ICUs has been explored in various studies. Gunter et al. developed and tested an electronic multidisciplinary rounding tool, demonstrating improved communication and clarity in clinical goals [11]. Similarly, Hallam et al. conducted a qualitative study and found that rounding checklists not only standardize care but also enhance team engagement and task completion [13]. Narasimhan et al. found that the use of a daily goals worksheet significantly improved nurse-physician communication and satisfaction, highlighting the power of visual goal tracking [14]. These studies show that structured formats like FAST HUGS BID can act as checklists during rounds to ensure critical care interventions are not missed.

The Institute for Healthcare Improvement (IHI) has long advocated for standardizing care to reduce hospital-acquired infections such as CAUTI and central line-associated bloodstream infections (CLABSI). Their resources emphasize that protocols like FAST HUGS BID inherently support such objectives through the inclusion of catheter and ulcer prophylaxis monitoring [15]

Studies have also focused on optimizing communication in the ICU through standardized processes. Justice et al. emphasized the value of visually displayed patient goals during cardiac ICU rounds, which enhanced team collaboration and care accuracy [24]. Kragie et al. reinforced these findings in pediatric ICUs, where a nurse-driven rounding tool improved interdisciplinary communication and quality of care [16]. O'Brien et al. found that

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redesigning ICU rounds with standardized elements led to better interdisciplinary communication and patient outcomes [17]. These findings demonstrate that introducing FAST HUGS BID into routine practice could further enhance these benefits.

FAST HUGS BID has shown versatility across patient demographics. Laurent applied the mnemonic to geriatric patients and observed improved holistic care for aging populations [18]. Meanwhile, Nair et al. proposed modifications of the mnemonic for surgical patients, adapting it to specific perioperative needs [19]. These studies suggest that the protocol can be contextually modified while preserving its core benefits.

The importance of multidisciplinary care teams in ECMO (extracorporeal membrane oxygenation) units has also been emphasized. Lei and Jing discussed the critical coordination points for nursing care during ECMO therapy, advocating for structured nursing roles to ensure continuity and quality [20]. Na et al. further demonstrated that dedicated ECMO teams significantly improve clinical outcomes in acute respiratory failure cases, reinforcing the need for structured protocols and communication tools [10]. Bruni et al. supported this by reporting the successful management of a septic COVID-19 patient via ECMO using a multidisciplinary strategy [21]. These cases illustrate how structured approaches, like FAST HUGS BID, are essential in complex interventions.

The potential of structured teaching programs in improving nursing knowledge and compliance with FAST HUGS BID is evident. Payal et al. found that educational interventions significantly improved nurses' understanding and implementation of the mnemonic, resulting in better patient care and safety [22]. This aligns with broader efforts to integrate evidence-based practice into nursing education to foster critical thinking and protocol adherence.

Monares Zepeda and Galindo Martín emphasized the nutritional aspects of critical care by introducing a "nutritional FAST HUG," reinforcing the need to prioritize feeding and metabolic support in ICUs [23]. These specialized adaptations underline the protocol's flexibility and its foundational role in comprehensive critical care.

In summary, the reviewed literature converges on several themes. First, the use of standardized protocols like FAST HUGS BID improves interdisciplinary communication and ensures consistency in patient care. Second, visual aids and rounding tools facilitate clearer goal setting and role delineation. Third, structured teaching programs enhance nurse competency and protocol adherence. Finally, the versatility of FAST HUGS BID across patient populations and clinical settings suggests its broad applicability. This review underscores the need for continued research and implementation of structured teaching programs around the FAST HUGS BID protocol to strengthen nursing practice and optimize outcomes in ICUs.

3. Methodology

This study adopted a pre-experimental one-group pre-test–post-test design to evaluate the effectiveness of a structured teaching programme on the FAST HUGS BID protocol among ICU nurses. The study was conducted in selected hospitals, and the target population included staff nurses working in intensive care units.

A non-probability purposive sampling technique was used to select participants who met the inclusion criteria. The sample consisted of ICU nurses willing to participate and available during the data collection period. A structured knowledge questionnaire based on the FAST HUGS BID protocol was used as the data collection tool, validated by experts in critical care nursing.

The study was conducted in three phases:

1. **Pre-Test:** Baseline knowledge was assessed using the structured questionnaire.
2. **Intervention:** A structured teaching programme on the FAST HUGS BID protocol was administered using lectures, demonstrations, and visual aids.
3. **Post-Test:** Knowledge was reassessed after the intervention using the same questionnaire.

Data were analyzed using SPSS software. Descriptive statistics (mean, standard deviation, frequency, and percentage) summarized demographic variables and knowledge scores. The paired t-test was used to compare pre-test and post-test scores, assessing the effectiveness of the intervention. A p-value <0.05 was considered statistically significant.

4. Results and discussion

The present study aimed to assess the effectiveness of a structured teaching programme on the FAST HUGS BID protocol for critically ill patients among ICU nurses in selected hospitals. The findings were analyzed using descriptive and inferential statistics, primarily focusing on pre- and post-intervention comparison of knowledge levels. The data were analyzed using SPSS, and p-values were calculated to determine the statistical significance of changes observed.

To begin with, the mean pre-test score of the participants was observed to be 10.42 (SD = 2.31), whereas the post-test mean score increased significantly to 16.87 (SD = 1.94). The difference was statistically tested using a paired t-test, which yielded a p-value < 0.001, indicating a highly significant improvement in knowledge following the structured teaching intervention.

Table 1: Comparison of Pre-Test and Post-Test Knowledge Scores of ICU Nurses on FAST HUGS BID Protocol

Test Phase	Mean Score	Standard Deviation	p-value
Pre-Test	10.42	2.31	
Post-Test	16.87	1.94	<0.001

In addition to the overall knowledge assessment, item-wise analysis revealed significant gains across each component of the FAST HUGS BID checklist:

1. **Feeding & Analgesia:** Pre-test mean score of 1.52 increased to 2.78 in the post-test (p < 0.01).
2. **Sedation & Thromboembolism Prevention:** Mean scores improved from 1.38 to 2.74 (p < 0.01).
3. **Head-of-Bed Elevation & Ulcer Prevention:** Improved from 1.24 to 2.69 (p < 0.01).
4. **Glycemic Control & Bowel Care:** Showed an increase from 1.29 to 2.72 (p < 0.01).
5. **Indwelling Catheter & De-escalation:** Increased from 1.19 to 2.60 (p < 0.01).]

Table 2: Component-Wise Comparison of Pre-Test and Post-Test Mean Scores on FAST HUGS BID Protocol

Component	Pre-Test Mean	Post-Test Mean	p-value
Feeding & Analgesia	1.52	2.78	<0.01
Sedation & Thromboprophylaxis	1.38	2.74	<0.01
HOB Elevation & Ulcer Prevention	1.24	2.69	<0.01
Glycemic Control & Bowel Care	1.29	2.72	<0.01
Indwelling Catheter & De-escalation	1.19	2.60	<0.01

The p-values for all components of the FAST HUGS BID checklist were well below the 0.05 significance level, confirming that the structured teaching programme had a statistically significant positive impact on the knowledge of ICU nurses regarding the protocol.

Additionally, a correlation analysis between demographic variables (age, experience, and qualification) and post-test scores revealed no statistically significant associations (p > 0.05), suggesting that the intervention was equally effective across various demographic groups.

These findings underscore the utility of structured teaching interventions in enhancing clinical protocol adherence among critical care nurses, ultimately contributing to improved patient outcomes in the ICU.

5. Conclusion

The findings of this pre-experimental study demonstrate that a structured teaching programme significantly enhances ICU nurses' knowledge regarding the FAST HUGS BID protocol, as evidenced by a substantial improvement in post-test scores across all protocol components. The uniform effectiveness of the intervention, irrespective of demographic variables, highlights the broad applicability and value of structured educational strategies in critical care settings. By strengthening nurses' understanding of essential daily care elements—such as feeding, analgesia, sedation, thromboembolism prophylaxis, glycemic control, bowel care, and catheter management—the programme supports improved adherence to evidence-based practices and has the potential to reduce preventable ICU complications. These results underscore the importance of continuous professional development and standardized training in enhancing the quality and safety of critical care, ultimately contributing to better patient outcomes.

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