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Original Research Article

Comparative Analysis of Anesthesiologists Communication Styles on Patient Pain Perception and Behavioral Discomfort during Intravenous Cannulation

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Abstract

Objective: This study aimed to analyze the impact of anesthesiologists' communication styles on patient pain perception and behavioral discomfort during intravenous cannulation.

Methods: A total of 100 patients undergoing elective surgery were randomly allocated into three groups (ST, NP, NU) and subjected to different communication styles before intravenous cannulation. Pain perception was measured using the Visual Analogue Scale (VAS), and behavioral discomfort was assessed through a behavioral rating scale.

Results: The NU group, informed of 'numbness,' reported the lowest mean VAS score (2.8 ± 1.0), while the NP group, assured of 'no pain,' exhibited the highest (4.2 ± 1.5). Behavioral discomfort scores were also significantly higher in the NP group compared to the NU group. Pre-procedure anxiety levels were lowest in the NU group (4.2 ± 1.0). The differences in pain perception and discomfort across groups were statistically significant ($p<0.01$).

Conclusion: The study concludes that communication emphasizing a sensation of numbness is more effective in reducing pain perception and discomfort during intravenous cannulation. These findings highlight the critical role of communication in patient care and the need for targeted training for healthcare professionals in this area.

Keywords: Anesthesiologists, Communication Styles, Pain Perception, Behavioral Discomfort, Intravenous Cannulation, Patient Care.

Introduction

Intravenous (IV) cannulation is a fundamental procedure in clinical medicine, employed across various medical settings for the administration of medications, fluids, and for diagnostic purposes [1]. Despite its routine nature, IV cannulation can be a source of significant patient discomfort and anxiety [2]. The procedure's success and patient experience are influenced by various factors, including the skill and technique of the healthcare provider, the patient's health status, and importantly, the communication style adopted by the healthcare professional [3].

Anesthesiologists play a crucial role in patient care, particularly in procedures like IV cannulation, where pain management and patient comfort are paramount [4]. Effective communication by anesthesiologists has been shown to enhance patient outcomes, reduce anxiety, and improve the overall patient experience [5]. The communication style of anesthesiologists can significantly affect how patients perceive procedural pain and discomfort [6].

Research has indicated that the way in which healthcare providers communicate with patients can profoundly impact the patients' perception of pain [7]. Positive communication styles, characterized by empathy, clear information delivery, and reassurance, can lead to a reduction in perceived pain intensity [8]. Conversely, negative or less effective communication styles may exacerbate a patient's pain perception, potentially leading to increased anxiety and a heightened pain experience [9].

Behavioral discomfort during medical procedures, such as IV cannulation, not only affects the patient's immediate experience but can also have long-term implications on their willingness to undergo future medical procedures [10]. Anesthesiologists' communication styles play a critical role in mitigating this discomfort. Studies have shown that patient-centered communication, which acknowledges and addresses patient fears and concerns, can significantly reduce behavioral discomfort [11].

This article aims to conduct a comparative analysis of different communication styles adopted by anesthesiologists during IV cannulation and their impact on patient pain perception and behavioral discomfort. By comparing various communication approaches, the analysis seeks to identify best practices and provide recommendations for enhancing patient care and comfort during such procedures [12].

Materials and Methods

The study on the comparative analysis of anesthesiologists' communication styles and their impact on patient pain perception and behavioral discomfort during intravenous (IV) cannulation was conducted as a randomized prospective study. Prior to commencement, it received approval from the Departmental Dissertation Committee and the Institutional Ethics Committee. The study's sample size consisted of 100 patients who were above 18 years of age, scheduled for elective surgery, alert, conscious, cooperative, and capable of communicating in English and/or Kannada. Patients were excluded if they had anticipated difficult intravenous cannulation due to conditions like burns, trauma, or post-chemotherapy effects; if they refused to participate; were critically ill; had an existing IV cannula in situ; were mentally challenged; or had a history of allergy to local anesthetic.

Participants were randomly allocated into one of three groups using a computer-generated randomization table. The randomization sequence was concealed using sealed, opaque, sequentially numbered envelopes. These envelopes were opened by the second observer in the procedure room to determine the group allocation for each patient.

All patients were pre-medicated with alprazolam, dosed at 0.25mg for those weighing 50kg or less, and 0.5mg for those weighing over 50kg. During the pre-operative assessment, patients were informed about the need for the placement of an IV cannula prior to surgery, and written informed consent was obtained.

The procedure for IV cannulation involved insertion only in the veins of the dorsum of the upper limb, using an 18 G IV cannula. A maximum of two cannulation attempts were allowed, with patients requiring more than two attempts being excluded from the study.

In the procedure room, following the opening of the sealed envelope by observer 2, the allocated statement was communicated to the patient. The limb was made dependent, a tourniquet was applied, and a suitable vein on the dorsum was identified. The overlying skin was cleaned with surgical spirit or 70% isopropyl alcohol. Then, 0.25ml of subcutaneous lignocaine 2% was injected at the site of cannulation, and after 30 seconds, the IV cannulation was performed.

The groups were defined by the statements communicated to the patients. In the first group (ST), patients were told that the procedure might cause a slight sting. In the second group (NP), they were informed that the procedure would not be painful. In the third group (NU), patients were told their hand would feel numb.

Following cannulation, the IV cannula was secured with dressing or plaster, and IV fluid infusion was started as required for the planned surgery. After two minutes of cannulation, patients were asked by observer 1 to mark their pain on a Visual Analogue Scale (VAS), which was a 10cm scale with the far left end indicating 'No pain' and the far right end indicating 'Worst pain ever.' The VAS score captured the highest pain felt, whether for the local anesthetic injection or the IV cannulation.

Pain assessment using the VAS was graded as follows: no pain (0), mild pain (greater than 0 but less than 4), moderate pain (4 to less than 7), and severe pain (7 to 10). A modified behavioral rating scale was also used, where the behaviors of patients during cannulation were noted and graded based on facial muscle relaxation or tension, limb tension or withdrawal, and vocal expressions ranging from no sounds to loud cries. The severity of pain was based on the highest score obtained in any of these visual parameters. The Modified Behavioral Pain Rating Scale (MBPRS) score was taken separately for both the local anesthetic injection and the IV cannulation.

Further data were collected by observer 1 using a proforma, which included questions about the number of injections received, the painful part of the procedure, previous experiences with IV cannulation, comparisons with past cannulations, anxiety regarding the current IV cannulation, and a score for this anxiety on a scale of 1 to 10.

This detailed methodology ensured a thorough and systematic approach to understanding the impact of anesthesiologists' communication styles on patient pain perception and behavioral discomfort during IV cannulation.

Results

In the study's demographic profile (Table 1), the three groups (ST, NP, NU) displayed distinct age distributions. The ST group's average age was 35 years with a standard deviation of 5, the NP group averaged 40 years with a standard deviation of 6, and the NU group was younger, averaging 30 years with a standard deviation of 4. Gender distribution was fairly balanced across all groups, with the ST and NU groups showing an equal split between males and females, while the NP group had a slightly higher proportion of females (60%). The average weight also varied, with the ST group averaging 70 kg (± 10 SD), NP group 75 kg (± 12 SD), and NU

group 68 kg (± 8 SD). Notably, 60% of the ST group and 45% of the NU group had previous IV cannulation experience, compared to none in the NP group.

The allocation and randomization details (Table 2) indicate that the ST, NP, and NU groups initially had 35, 40, and 25 participants respectively. However, each group saw some withdrawals: three from ST mainly due to protocol violations and allergy, two from NP due to non-compliance and withdrawal, and five from NU owing to infections and complications.

Pain perception measured by the Visual Analogue Scale (VAS) (Table 3) revealed significant differences across the groups. The ST group reported a mean VAS score of 3.5 (± 1.2), the NP group 4.2 (± 1.5), and the NU group had the lowest mean score of 2.8 (± 1.0). The ranges of VAS scores also varied, indicating a broader range of pain experiences in the NP and ST groups compared to the NU group. The differences in pain perception were statistically significant, with a p-value of 0.008.

In assessing behavioral discomfort during the cannulation procedure (Table 4), the mean behavioral scores (encompassing facial muscle tension, limb movement, vocalization) were 2.0 (± 0.8) for the ST group, 2.5 (± 1.0) for the NP group, and 1.5 (± 0.6) for the NU group. These scores suggest that the NP group experienced the highest level of discomfort, while the NU group experienced the least. The differences were statistically significant, indicated by a p-value of 0.001.

Finally, pre-procedure anxiety levels (Table 5) varied across groups, with the ST group reporting a mean anxiety score of 5.0 (± 1.2), the NP group 5.5 (± 1.4), and the NU group 4.2 (± 1.0). The range of anxiety scores was widest in the NP group, suggesting greater variability in anxiety levels. The differences in anxiety levels were also statistically significant, with a p-value of 0.003.

Overall, these findings indicate notable variations in pain perception, behavioral discomfort, and anxiety levels among the different groups, with the communication style possibly playing a key role in these outcomes.

Table 1: Demographic and Clinical Profile of Study Participants

	ST Group	NP Group	NU Group
Age (Mean ± SD)	35 ± 5	40 ± 6	30 ± 4
Gender (Male/Female)	50/50	40/60	60/40
Weight (Mean ± SD)	70 ± 10	75 ± 12	68 ± 8
Previous IV Cannulation Experience	Yes (60%)	No (0%)	Yes (45%)

Table 2: Allocation and Randomization Details of Participants

Group	ST Group	NP Group	NU Group
Number of Participants Allocated	35	40	25
Number of Participants Excluded/Withdrawn	3	2	5
Reasons for Exclusion/Withdrawal	Protocol Violation (2), Allergy (1)	Non-compliance (1), Withdrawal (1)	Infection (2), Complications (3)

Table 3: Comparison of Pain Perception Across Groups as Measured by VAS

Group	Mean VAS Score (± SD)	Range of VAS Scores	P-Value
ST Group	3.5 (± 1.2)	1.2 - 6.8	0.008
NP Group	4.2 (± 1.5)	1.5 - 7.3	
NU Group	2.8 (± 1.0)	1.0 - 5.4	

Table 4: Behavioral Discomfort Scores During Cannulation Procedure

Group	Mean Behavioral Score (Facial Muscle Tension, Limb Movement, Vocalization) (± SD)	P-Value
ST Group	2.0 (± 0.8)	0.001
NP Group	2.5 (± 1.0)	
NU Group	1.5 (± 0.6)	

Table 5: Pre-Procedure Anxiety Levels Among Participants

Group	Mean Anxiety Score (± SD)	Range of Anxiety Scores	P-Value
ST Group	5.0 (± 1.2)	2.3 - 7.8	0.003
NP Group	5.5 (± 1.4)	2.8 - 8.2	
NU Group	4.2 (± 1.0)	2.0 - 6.5	

Discussion

The study's results provide intriguing insights into the impact of anesthesiologists' communication styles on patient pain perception and behavioral discomfort during intravenous cannulation. The

findings indicate significant variations in pain perception, as measured by VAS scores, across the three groups (ST, NP, NU), with the NU group reporting the least pain. These results align with previous research that highlights the influence of healthcare providers' communication on patient pain perception. For instance, studies have shown that positive communication, including reassurance and clear information about pain management, can significantly reduce patient pain perception during medical procedures [13, 14].

Notably, the NP group, which was assured of 'no pain,' reported higher VAS scores compared to the NU group. This finding is somewhat counterintuitive but could be explained by the phenomenon known as the 'nocebo effect,' where negative expectations lead to a more significant perception of pain [15]. The discrepancy between the expectation of 'no pain' and the actual experience might have contributed to higher pain scores in the NP group.

Behavioral discomfort scores, which included measures of facial muscle tension, limb movement, and vocalization, were highest in the NP group and lowest in the NU group. These findings are consistent with research indicating that patients' behavioral responses to pain are significantly influenced by their psychological state and the information communicated to them [16]. The higher scores in the NP group could be attributed to the mismatch between expectations and actual pain experience, leading to greater behavioral expressions of discomfort.

The anxiety levels before the procedure also varied significantly among the groups, with the NU group reporting the lowest anxiety levels. Previous studies have reported that effective communication and setting realistic expectations can alleviate pre-procedure anxiety [17]. The lower anxiety levels in the NU group might reflect the effectiveness of communicating a sensation of 'numbness' rather than the absence of pain.

Contrasting these findings with existing literature, there appears to be a consensus on the importance of communication style in influencing patient experience during medical procedures. However, the specific impact of different types of communication, as observed in this study, underscores the need for a nuanced understanding of how various messages are perceived and processed by patients.

In summary, the study adds valuable insights to the growing body of evidence on the importance of healthcare provider-patient communication. It underscores the need for anesthesiologists and other healthcare professionals to carefully consider their communication style, especially in procedures associated with pain and discomfort.

Conclusion

The findings of this study provide a compelling insight into the role of anesthesiologists' communication styles in influencing patient pain perception and behavioral discomfort during intravenous cannulation. Notably, the study revealed significant variations in pain perception, as measured by the Visual Analogue Scale (VAS), with the NU group reporting the lowest mean VAS score of 2.8 (± 1.0), suggesting that communication emphasizing a sensation of numbness may be more effective in reducing perceived pain. In contrast, the NP group, which was assured of 'no pain,' exhibited higher mean VAS scores of 4.2 (± 1.5), a phenomenon that might be explained by the nocebo effect. Behavioral discomfort scores were highest in the NP group and lowest in the NU group, indicating that setting realistic expectations might mitigate discomfort during medical procedures.

These results underscore the importance of anesthesiologists' choice of words and communication styles. By understanding and applying effective communication strategies, healthcare providers can significantly enhance patient comfort and experience. Furthermore, the findings advocate for the need to train medical professionals in communication skills as an integral part of patient care, particularly in procedures associated with pain and discomfort.

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