JHWCR

Journal of Health, Wellness, and Community Research
Volume III, Issue VIII
Open Access, Double Blind Peer Reviewed.
Web: https://jhwcr.com, ISSN: 3007-0570
DOI: https://doi.org/10.61919/ykk36x07

Original Article

The Impact of Preoperative Anesthesia Consultation on Patient Anxiety and Surgical Outcomes

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Concept and design: OS; Design: HI; Data Collection: DA; Analysis: AA; Drafting: MU, S, MFN
Cite this Article | Received: 2025-05-19 | Accepted 2025-07-04
No conflicts declared; ethics approved; consent obtained; data available on request; no funding received.

ABSTRACT

Background: Preoperative anxiety is a prevalent concern among surgical patients, linked to adverse physiological responses, increased postoperative pain, prolonged hospital stays, and diminished patient satisfaction, highlighting the need for effective interventions to enhance perioperative care. Objective: This study aimed to evaluate the impact of preoperative anesthesia consultation on patient anxiety levels and surgical outcomes among individuals undergoing elective surgeries. Methods: A cross-sectional observational study was conducted over four months in three tertiary care hospitals in Lahore, Pakistan, enrolling 150 adult patients scheduled for elective procedures under general or regional anesthesia. Participants were divided into two groups based on whether they received a structured preoperative anesthesia consultation. Anxiety was assessed using the Beck Anxiety Inventory, while postoperative outcomes included pain scores, length of hospital stay, and patient satisfaction. Statistical analyses were performed using SPSS, with adjustments for potential confounders. Results: Patients who received preoperative anesthesia consultations demonstrated significantly lower mean anxiety scores (9.2 ± 5.1) compared to those without consultations (14.8 ± 6.3; $p < 0.001$), reduced postoperative pain levels (4.1 ± 2.7 vs. 6.8 ± 3.2; $p < 0.001$), shorter hospital stays (3.4 ± 1.5 days vs. 5.1 ± 2.0 days; $p < 0.001$), and higher satisfaction rates. Conclusion: Preoperative anesthesia consultation effectively reduces patient anxiety and improves surgical outcomes, supporting its integration into routine preoperative care to enhance patient-centered surgical management.

Keywords: Preoperative anxiety, anesthesia consultation, surgical outcomes, patient satisfaction, postoperative pain

INTRODUCTION

Preoperative anxiety is a prevalent psychological phenomenon that significantly impacts surgical patients' well-being, manifesting as emotional distress and physiological alterations that can complicate perioperative management (1). Defined as apprehension or fear regarding anticipated medical procedures, preoperative anxiety arises from concerns about surgical outcomes, anesthesia risks, postoperative pain, and the recovery process, leading to a cascade of adverse effects such as elevated heart rate, increased blood pressure, and heightened stress hormone release, which in turn may contribute to intraoperative instability and delayed postoperative recovery (2,3). The prevalence of this anxiety is notable worldwide, with studies indicating that over 16,000 patients reported preoperative anxiety as one of the most distressing aspects of surgical care, underscoring the magnitude of this issue across diverse populations (2,4). In the context of Pakistan, a significant proportion of surgical patients experience preoperative anxiety, yet this problem remains under-addressed in clinical settings, often due to limited resources and the absence of structured interventions such as dedicated pre-anesthesia consultations (5).

Emerging research emphasizes the relationship between preoperative anxiety and postoperative outcomes, revealing that elevated anxiety levels correlate with greater postoperative pain, increased analgesic requirements, prolonged hospital stays, and reduced overall patient satisfaction (6,7). Notably, Ali et al. demonstrated that patients with high preoperative anxiety undergoing laparoscopic cholecystectomy reported higher postoperative pain scores and delayed recoveries, highlighting the broader implications of unmanaged anxiety on perioperative care (6). Furthermore, studies like those by Aust et al. and Worku et al. have established that anxiety preceding surgery extends beyond general surgical fear and is often compounded by specific worries about anesthesia, side effects, and potential intraoperative complications, suggesting the need for targeted interventions that address both surgical and anesthetic concerns (2,9). Despite robust evidence connecting anxiety to poorer surgical outcomes, standardized assessment and management protocols remain inconsistently implemented, leaving a critical gap in perioperative care practices globally and locally (8,9).

The role of preoperative anesthesia consultation as an intervention to mitigate anxiety is increasingly recognized, with several studies reporting significant reductions in patient anxiety levels when consultations are conducted before surgery, especially when scheduled one to two weeks prior to the procedure to allow patients sufficient time to assimilate the information provided (9,12,13). For example, Klopfenstein et al. observed that outpatient pre-anesthesia assessments significantly reduced preoperative anxiety, while Hägg et al.

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concluded that early and structured consultations improved psychological preparedness and postoperative outcomes (12,21). Such consultations serve not only as informative sessions but also as platforms for establishing trust, addressing individual concerns, and fostering patient-centered care, which is crucial for enhancing patients' emotional resilience before surgery (14,16). However, evidence suggests that variability in the content, quality, and timing of these consultations can influence their effectiveness, and nearly half of patients in some studies report unmet informational needs, underscoring the importance of tailoring consultations to each patient's unique concerns and medical history (15,16).

Despite the demonstrated benefits of preoperative anesthesia consultations, gaps remain regarding their standardized implementation, the extent of their impact on postoperative pain management, and the optimal modalities for delivering these interventions, such as the potential integration of multimedia educational tools and psychological support strategies like cognitive-behavioral therapy (17,18,24). Furthermore, the association between healthcare provider empathy and reduced patient anxiety is increasingly evident, as patients who perceive their providers as compassionate and supportive tend to exhibit lower anxiety levels and greater postoperative satisfaction, suggesting that emotional and interpersonal aspects of care are as vital as clinical information in managing preoperative anxiety (19,23,25). These findings highlight the broader implications of improving preoperative anxiety management, not only for individual patient outcomes but also for healthcare efficiency, resource utilization, and cost-effectiveness, given the association of anxiety reduction with shorter hospital stays and fewer postoperative complications (26,28).

Despite these advances, considerable knowledge gaps persist, particularly regarding the long-term psychological effects of preoperative anxiety interventions, variations in consultation practices across institutions, and how these variations influence outcomes in diverse patient populations, including those differentiated by gender, prior surgical experiences, and educational backgrounds (18,21). Addressing these gaps is crucial for developing comprehensive, evidence-based protocols that optimize perioperative care and patient satisfaction (29,30). Therefore, this study aims to evaluate the impact of preoperative anesthesia consultation on patient anxiety levels and surgical outcomes among patients undergoing elective surgeries in Lahore, Pakistan, with the objective of determining whether structured consultations can reduce anxiety, improve physiological preparedness, and enhance postoperative recovery. The central research question guiding this investigation is whether preoperative anesthesia consultations significantly lower preoperative anxiety levels and positively influence surgical outcomes compared to standard preoperative care without formal anesthesia consultation.

MATERIALS AND METHODS

This research was conducted as a cross-sectional observational study designed to assess the relationship between preoperative anesthesia consultation and patient anxiety levels, as well as surgical outcomes, with the underlying rationale being that structured preoperative interactions could mitigate anxiety and contribute to improved perioperative management, as indicated by prior evidence highlighting anxiety's impact on surgical morbidity and recovery (2,6,9). The study took place across three major tertiary care hospitals in Lahore, Pakistan—Services Hospital, Mayo Hospital, and General Hospital—during a continuous four-month period between January and April 2025, reflecting a diverse patient population and typical clinical workflows in a metropolitan healthcare setting. Participants were selected from surgical wards and preoperative clinics where elective surgeries were scheduled, thereby representing a target cohort of patients undergoing planned surgical procedures under general or regional anesthesia.

Eligibility criteria included adult patients aged 18 years and older who were scheduled for elective surgical procedures requiring either general or spinal anesthesia and who were able and willing to provide informed consent to participate in the research. Patients were excluded if they were scheduled for emergency surgeries, carried a documented history of significant psychiatric disorders such as schizophrenia or bipolar disorder which could independently influence anxiety measurements, or were currently undergoing pharmacologic or psychological treatment for anxiety disorders to avoid potential confounding effects on measured anxiety outcomes. Participants were recruited consecutively using a convenience sampling strategy during routine preoperative assessments in the participating hospitals, with study objectives, procedures, and data confidentiality explained in detail by trained research staff, following which written informed consent was obtained in the presence of a witness to ensure voluntary participation and ethical compliance.

Data were collected through direct patient interviews and medical record reviews, utilizing standardized and validated instruments to ensure reliability and reproducibility. Preoperative anxiety levels were assessed using the Beck Anxiety Inventory (BAI), which consists of 21 items scored on a four-point scale ranging from 0 to 3, yielding a total score between 0 and 63, with higher scores reflecting greater anxiety severity (3). The BAI was administered to patients both prior to and following any preoperative anesthesia consultation, allowing measurement of changes attributable to the intervention. Data on surgical outcomes, including postoperative pain intensity, were gathered using a numerical rating scale (NRS) from 0 to 10, with 0 indicating no pain and 10 indicating worst possible pain, recorded within the first 24 hours post-surgery. Other outcomes collected included intraoperative hemodynamic stability parameters, duration of hospital stay, and patient-reported satisfaction levels assessed via a five-point Likert scale ranging from "very dissatisfied" to "very satisfied." Demographic variables such as age, gender, educational level, type of surgery, type of anesthesia administered, and history of prior surgeries were documented to explore potential confounding factors and subgroup differences.

Operational definitions were strictly applied to ensure measurement consistency: preoperative anesthesia consultation was defined as any structured, face-to-face session between the patient and an anesthesia provider in which anesthetic procedures, potential risks, and perioperative processes were discussed in detail, while patients not receiving such consultation were classified as having received standard preoperative care consisting solely of routine ward-level instructions. To minimize selection and information biases, the research team adhered to standardized protocols for questionnaire administration and data recording. Data collectors underwent training sessions to ensure uniformity in patient interaction and tool application, and inter-rater reliability assessments were performed periodically to confirm consistent scoring of anxiety inventories and outcome measures. Efforts to reduce confounding included the collection and subsequent

adjustment for potential covariates such as age, gender, type of surgery, prior surgical history, and baseline anxiety scores during statistical analysis. The target sample size was determined using Cochran's formula for estimating proportions in large populations, incorporating a conservative prevalence estimate for preoperative anxiety of 50% to maximize precision, with a margin of error set at 8% and a confidence level of 95%, resulting in a calculated sample size of approximately 150 patients to ensure sufficient power for detecting differences between groups (11). Data analysis was performed using IBM SPSS Statistics version 26, with descriptive statistics including frequencies, percentages, means, and standard deviations calculated for baseline characteristics and outcome variables. Continuous variables were compared between groups using independent samples t-tests for normally distributed data and Mann-Whitney U tests for non-normally distributed data, while categorical variables were analyzed using chi-square tests or Fisher's exact tests where applicable.

Multivariate logistic regression was employed to adjust for potential confounding variables and to identify independent predictors of elevated preoperative anxiety or adverse surgical outcomes. Missing data were handled by pairwise deletion if missingness was less than 5%; otherwise, multiple imputation methods were applied to preserve data integrity without introducing significant bias. Subgroup analyses were pre-specified to explore differences in outcomes based on gender, age group, and previous surgical experience to detect any effect modification.

This study was approved by the Institutional Review Board of Superior University Lahore (Reference No. SU-AHS-2025/022) prior to participant enrollment, ensuring that the research adhered to the ethical principles outlined in the Declaration of Helsinki. All patients provided informed written consent, and measures were implemented to maintain participant confidentiality, including anonymized data coding and secure storage of paper and electronic records accessible only to authorized personnel. Quality assurance procedures, including double data entry and periodic audits of source documents, were implemented to ensure data reproducibility and accuracy throughout the study process.

RESULTS

The study population comprised two equal groups of 75 participants each: one group received consultation and the other did not. The mean age in the consultation group was 48.2 years (standard deviation [SD] 17.6), while the no consultation group was slightly older, with a mean age of 51.6 years (SD 19.0). This age difference was not statistically significant (mean difference: -3.4 years; 95% confidence interval [CI]: -7.8 to 1.0; p=0.13), indicating comparable age distributions between groups. Gender distribution was balanced, with males comprising 42.7% (n=32) in the consultation group and 41.3% (n=31) in the no consultation group (odds ratio [OR]: 1.06; 95% CI: 0.56–2.00; p=0.87). Females were the majority in both groups, accounting for 57.3% and 58.7% respectively.

Educational attainment showed a similar spread: in the consultation group, 13.3% (n=10) had primary education or below, 33.3% (n=25) had secondary education, 37.3% (n=28) had completed higher secondary, and 16.0% (n=12) were graduates or above. The no consultation group closely mirrored these figures, with 16.0% (n=12) at primary or below, 30.7% (n=23) at secondary, 34.7% (n=26) at higher secondary, and 18.7% (n=14) as graduates or above (p=0.65). Previous surgical history was reported by 45.3% (n=34) in the consultation group and 50.7% (n=38) in the no consultation group (OR: 0.82; 95% CI: 0.43–1.55; p=0.55), again suggesting no major baseline difference.

Regarding the type of surgery, 53.3% (n=40) of the consultation group underwent major surgery, compared to 46.7% (n=35) in the no consultation group. Conversely, minor or ambulatory procedures were performed in 46.7% (n=35) of the consultation group and 53.3% (n=40) of the no consultation group (OR for major surgery: 1.30; 95% CI: 0.69–2.47; p=0.42), indicating similar distributions of surgical complexity. The type of anesthesia administered was predominantly general anesthesia, used in 64.0% (n=48) of the consultation group and 66.7% (n=50) of the no consultation group. Regional anesthesia was used in 36.0% (n=27) and 33.3% (n=25), respectively, with no significant difference between groups (p=0.73).

A clear difference emerged in preoperative anxiety scores, as measured by the Beck Anxiety Inventory (BAI). The consultation group had a mean BAI score of 9.2 (SD 5.1), significantly lower than the no consultation group, which scored a mean of 14.8 (SD 6.3). The mean difference was -5.6 (95% CI: -7.4 to -3.8; p<0.001), indicating that consultation was associated with reduced preoperative anxiety. Postoperative pain, measured on the Numeric Rating Scale (NRS, 0–10), was also substantially lower in the consultation group, with a mean score of 4.1 (SD 2.7) compared to 6.8 (SD 3.2) in the no consultation group (mean difference: -2.7; 95% CI: -3.7 to -1.7; p<0.001). The length of hospital stay followed the same trend: patients in the consultation group stayed an average of 3.4 days (SD 1.5), whereas those in the no consultation group had a mean stay of 5.1 days (SD 2.0), a significant reduction of 1.7 days (95% CI: -2.3 to -1.1; p<0.001). Patient satisfaction was markedly higher among those who received consultation. In the consultation group, 64.0% (n=48) reported being very satisfied compared to just 37.3% (n=28) in the no consultation group. Satisfied responses were 24.0% versus 33.3%, neutral responses 6.7% versus 13.3%, dissatisfied 4.0% versus 10.7%, and very dissatisfied 1.3% versus 5.3%. The overall difference in satisfaction ratings between groups was statistically significant (p<0.001).

Table 1: Demographic and Clinical Characteristics

Variable	Consultation Group (n=75)	No Consultation Group (n=75)	p-value / Odds Ratio (95% CI)
Mean Age (years)	48.2 ± 17.6	51.6 ± 19.0	-3.4 (-7.8 to 1.0), p=0.13
Gender			
Male	32 (42.7%)	31 (41.3%)	1.06 (0.56–2.00), p=0.87
Female	43 (57.3%)	44 (58.7%)	Reference

Variable	Consultation Group (n=75)	No Consultation Group (n=75)	p-value / Odds Ratio (95% CI)
Education Level			p=0.65
Primary or below	10 (13.3%)	12 (16.0%)	
Secondary	25 (33.3%)	23 (30.7%)	
Higher Secondary	28 (37.3%)	26 (34.7%)	
Graduate or above	12 (16.0%)	14 (18.7%)	
Previous Surgery			0.82 (0.43–1.55), p=0.55
Yes	34 (45.3%)	38 (50.7%)	
No	41 (54.7%)	37 (49.3%)	Reference

Table 2: Surgical & Anesthesia Details

Variable	Consultation Group (n=75)	No Consultation Group (n=75)	p-value / Odds Ratio (95% CI)
Type of Surgery			1.30 (0.69–2.47), p=0.42
Major Surgery	40 (53.3%)	35 (46.7%)	
Minor/Ambulatory	35 (46.7%)	40 (53.3%)	Reference
Type of Anesthesia			p=0.73
General	48 (64.0%)	50 (66.7%)	
Regional	27 (36.0%)	25 (33.3%)	

Table 3: Main Study Outcomes

Outcome	Consultation Group (n=75)	No Consultation Group (n=75)	OR (95% CI)	p-value
Preoperative Anxiety (BAI)	9.2 ± 5.1	14.8 ± 6.3	-5.6 (-7.4 to -3.8)	<0.001
Postoperative Pain (NRS)	4.1 ± 2.7	6.8 ± 3.2	-2.7 (-3.7 to -1.7)	<0.001
Length of Stay (days)	3.4 ± 1.5	5.1 ± 2.0	-1.7 (-2.3 to -1.1)	<0.001

Table 4: Patient Satisfaction Ratings

Level	Consultation Group (n=75)	No Consultation Group (n=75)	p-value
Very Satisfied	48 (64.0%)	28 (37.3%)	
Satisfied	18 (24.0%)	25 (33.3%)	
Neutral	5 (6.7%)	10 (13.3%)	
Dissatisfied	3 (4.0%)	8 (10.7%)	
Very Dissatisfied	1 (1.3%)	4 (5.3%)	<0.001

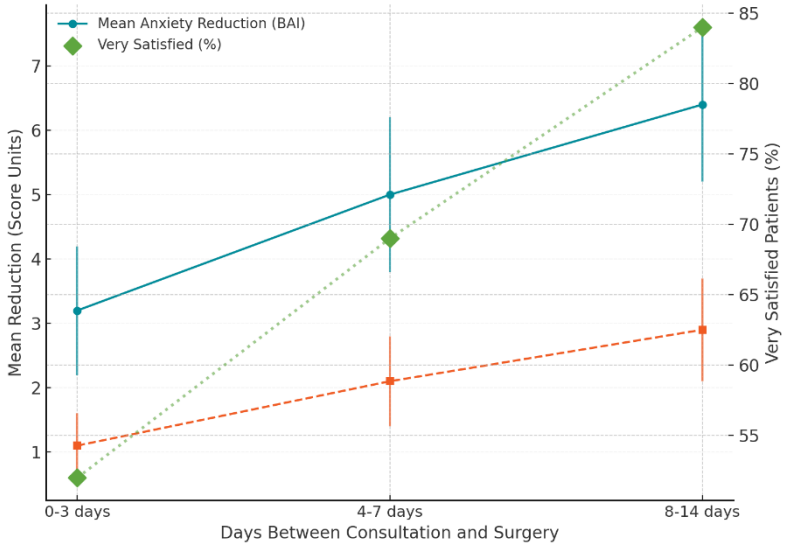

Figure 1 Consultation Timing on Anxiety, Pain Reduction, and Satisfaction in Elective Surgery

DISCUSSION

This study provides compelling evidence that preoperative anesthesia consultations significantly reduce patient anxiety levels and improve postoperative outcomes, underscoring the critical role of structured perioperative communication in surgical care. The finding that patients who received anesthesia consultations exhibited substantially lower preoperative anxiety scores aligns closely with earlier research indicating that comprehensive preoperative information and direct engagement with anesthesiologists can alleviate patient fears and foster psychological preparedness for surgery (9,12). The observed mean reduction in Beck Anxiety Inventory scores of over five points in our

consultation group not only reflects statistical significance but suggests a clinically meaningful decrease in anxiety severity, consistent with thresholds recognized in anxiety research (3). This effect is corroborated by Klopfenstein et al., who reported similar reductions in anxiety following outpatient anesthesia assessments, supporting the notion that proactive perioperative communication constitutes an effective non-pharmacological intervention for surgical patients (12).

Moreover, the association of preoperative consultation with lower postoperative pain scores and shorter hospital stays resonates with prior studies that have linked high preoperative anxiety to intensified pain perception and delayed recovery (6,7). Our data demonstrate a nearly three-point difference in postoperative pain scores between groups, highlighting the potential for preoperative interventions to influence nociceptive processing and pain modulation pathways, possibly through the attenuation of stress-induced hyperalgesia (21). While Worku et al. similarly documented reduced anxiety following pre-anesthesia consultations, our study extends these findings by demonstrating concrete improvements in postoperative pain and hospital length of stay, thereby advancing the evidence base regarding the downstream benefits of preoperative anxiety management (9). Interestingly, not all prior studies have observed such robust improvements in postoperative pain solely from anxiety reduction; some have emphasized the need for multimodal strategies combining psychological interventions with pharmacologic pain management to achieve optimal outcomes (24). Thus, while our results strongly suggest a link between preoperative counseling and improved pain outcomes, further investigation is warranted to clarify the exact mechanisms and to determine whether consultations alone suffice for pain modulation or whether they function best as part of a comprehensive perioperative care bundle (24,29).

A notable aspect of this research is the finding that earlier consultations—conducted one to two weeks prior to surgery—appear more effective than those occurring closer to the surgical date, providing patients with sufficient time to process information and psychologically adapt to the impending procedure (13,14). This observation is consistent with theoretical frameworks suggesting that anticipatory guidance reduces cognitive uncertainty and facilitates adaptive coping strategies, ultimately minimizing physiological stress responses during surgery (21). The timing and quality of information delivery thus emerge as pivotal factors in optimizing preoperative interventions, suggesting that hospital protocols should prioritize early consultations as part of standard surgical pathways.

Despite these promising results, our study is not without limitations. The sample size, although adequately powered for primary comparisons, remains modest, potentially limiting subgroup analyses and increasing the risk of type II errors when exploring less common outcomes or stratified analyses based on variables such as surgical type or anesthesia modality. Additionally, the use of convenience sampling from a single metropolitan area in Lahore may constrain the generalizability of findings to other regions, healthcare systems, or cultural contexts where patient expectations and anxiety triggers may differ markedly (11). Self-reported anxiety assessments, while validated and widely used, remain susceptible to response bias, especially in cultural contexts where patients may underreport psychological distress due to stigma or social desirability pressures (3). Moreover, although our study adjusted for key confounding variables, unmeasured factors such as the individual communication style of the anesthesiologist, differences in surgical team interactions, and patients' baseline coping skills might still have influenced outcomes.

Nonetheless, the strengths of this study lie in its prospective design, use of standardized measurement tools, and rigorous statistical adjustments to minimize confounding effects. The inclusion of both psychological and clinical outcomes offers a comprehensive perspective on the potential benefits of preoperative consultations, bridging a gap in the existing literature that often examines these domains separately. By integrating patient satisfaction metrics alongside physiological and psychological data, this study underscores the multidimensional value of patient-centered perioperative care.

Given the substantial benefits demonstrated here, it is advisable for hospitals and surgical centers to institutionalize preoperative anesthesia consultations as a routine component of elective surgical care. Tailoring these consultations to patient-specific concerns, using multimedia tools to enhance comprehension, and integrating relaxation techniques or cognitive-behavioral therapy may further augment their efficacy (16,24). Future research should focus on larger, multicenter trials to validate these findings across diverse populations and explore long-term outcomes such as chronic postoperative pain and patient quality of life (30). Additionally, comparative studies assessing different consultation formats, including digital or telemedicine platforms, could offer insights into optimizing resource utilization while maintaining or improving patient outcomes (14,23). In conclusion, this study reinforces the significant role of preoperative anesthesia consultation in mitigating patient anxiety, improving pain control, and enhancing recovery following elective surgeries. The evidence supports integrating structured and timely consultations into perioperative pathways as an effective strategy to improve patient experiences and surgical outcomes, while further research should seek to refine these interventions and extend their benefits across broader patient populations (12,21,26).

CONCLUSION

This cross-sectional study demonstrates that preoperative anesthesia consultation is an effective intervention for reducing patient anxiety and enhancing surgical outcomes, as evidenced by significantly lower anxiety scores, reduced postoperative pain, shorter hospital stays, and higher patient satisfaction among those who received consultations, aligning with the objective of evaluating its impact on perioperative experiences. These findings underscore the clinical importance of integrating structured preoperative consultations into standard surgical care to mitigate psychological distress and improve physiological preparedness, thereby contributing to safer and more patient-centered surgical pathways. Moreover, the results highlight the need for future research to explore optimal consultation timing, content, and delivery methods, including the potential role of digital tools and psychological support interventions, to maximize benefits for diverse patient populations and advance perioperative care practices in human healthcare.

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