

ORIGINAL ARTICLE

The Satisfaction-Success Paradox: Online Distance Learning Outcomes among Nursing Students during the COVID-19 Pandemic.

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Abstract

Introduction: The COVID-19 pandemic triggered an abrupt global transition to Online Distance Learning (ODL), posing significant challenges for nursing education, which depends heavily on hands-on clinical experiences. Although nursing students reported varying degrees of satisfaction with online learning, the extent to which these perceptions influenced academic success remained unclear. **Methods:** A cross-sectional study was conducted among 164 undergraduate nursing students at Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP) between August 2023 and January 2024. Participants completed a sociodemographic questionnaire, a validated 20-item Learning Satisfaction Scale, and provided their cumulative Grade Point Average (GPA).. Descriptive statistics were used to summarise participant characteristics and satisfaction levels, while Spearman's rank-order correlation assessed the relationship between learning satisfaction and academic performance. **Results:** Most participants were female (82.3%) and aged between 18 and 25 years (93.3%). The majority reported average internet stability (62.2%) and financial burden (63.4%) during ODL. Overall, 70.7% of students demonstrated moderate learning satisfaction, while 29.3% expressed low satisfaction. The mean GPA was 3.37 ± 0.32 , with 60.4% achieving satisfactory and 34.7% excellent performance. Correlation analysis revealed no significant association between total learning satisfaction and GPA ($r_s = 0.033$, $p = 0.672$), indicating that satisfaction did not influence academic performance. **Conclusion:** Although nursing students maintained satisfactory academic results, their overall learning satisfaction remained moderate. Academic performance during ODL may have been shaped more by motivation, adaptability, and institutional support. Continuous improvement in instructional design, interaction, and learner support is vital to enhance satisfaction and academic outcomes in future blended or online nursing education.

Keywords: *Academic performance, COVID-19, GPA, nursing education, online distance learning, student satisfaction.*

Introduction

The COVID-19 pandemic forced a sudden and seismic shift in higher education, pushing institutions globally to abandon traditional classrooms for Online Distance Learning (ODL) almost overnight [1]. This posed a particular challenge for nursing education, a field deeply rooted in clinical practice, hands-on simulation, and direct patient interaction—elements profoundly difficult to deliver in a virtual environment [2]. In Malaysia, the imposition of the Movement Control Order (MCO) from 2021 to 2022 formally suspended all in-person instructions, including essential clinical training. In response, the government leveraged its pre-existing investments in Learning Management Systems (LMS), to facilitate the rapid implementation of ODL and emergency remote teaching (ERT).

Student satisfaction has long been considered a barometer of educational quality and program effectiveness [3]. It encompasses a student's perception of everything from course design and technological ease to their interactions with instructors and peers. On the other hand, academic performance, typically measured by Grade Point Average (GPA), remains the primary, though imperfect, benchmark for student success [4].

The link between a student's satisfaction with their learning environment and their subsequent academic performance in ODL settings is not straightforward. Some studies suggest a positive cycle, where satisfied students perform better [1]. However, other evidence points to a troubling trend where dissatisfaction with ODL contributes to academic struggles, raising urgent questions about how the quality of the learning experience impacts achievement in practice-intensive fields like nursing [5].

This study, therefore, sought to delve into this complex dynamic by aiming to: (i) gauge the level of learning satisfaction with ODL among nursing students, (ii) assess their academic performance via GPA, and (iii) critically examine the relationship between the two to determine if

lower satisfaction could predict weaker academic outcomes during the pandemic.

Materials and methods

Study design

A cross-sectional study was conducted between August 2023 and January 2024 at Universiti Kuala Lumpur Royal College of Medicine Perak (UniKL RCMP). The study population comprised of nursing students enrolled in Semesters 2 to 6, who had completed at least one semester of ODL during the COVID-19 pandemic.

Samples and Samplings

The minimum required sample size was estimated using the Raosoft calculator, based on a 95% confidence level and a 5% margin of error. The calculation yielded 137 participants; however, anticipating a 20% attrition rate, the target sample was adjusted to 164, which was achieved. Participants were selected through convenience sampling.

Data Collection Instruments

The instrument used in this study consists of two sections:

Section A: Sociodemographic and Academic Data

Data on age, gender, semester level, primary device used for ODL (laptop, tablet, or smartphone), perceived financial burden (yes/no), and internet stability (good, average, poor) were collected. Academic performance was measured using the cumulative GPA on a 4.00 scale, verified against institutional records.

Section B: Learning Satisfaction

Learning satisfaction was measured using a 20-item modified instrument adapted from previously validated tools by Wan Mamat, et al (2022) and Bolliger, et al (2009) [5,6]. The scale assessed four domains: student readiness and perceptions of the learning environment,

technological and institutional support, educator–student interaction, and course content and critical challenges. Items were rated on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) and reverse-scored for negatively worded items. The instrument was first validated through a pilot study with 30 students, and the survey items were finalised based on its results. The instrument demonstrated strong reliability (Cronbach’s $\alpha = 0.91$). For negatively phrased statements (Items 17, 18, and 20), reverse scoring was applied before data analysis to ensure that higher scores consistently reflect a more positive perception of the online learning environment.

Data Collection and Processing

Eligible students were invited to participate via WhatsApp. Data were collected using a Google Forms survey after consent. All participants were provided with detailed information regarding the study’s aims, procedures, and the confidentiality of their responses. Informed consent was obtained electronically, and students retained the right to withdraw at any stage without penalty. A total of 164 nursing students participated in the study, yielding a 100% response rate.

Data Analysis

Data were analysed using SPSS version 25 (IBM Corp., 2017). IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp. Descriptive statistics (frequencies, percentages, means, and standard deviations) summarised participant characteristics, learning satisfaction, and GPA. Since the data were not normally distributed, the relationship between learning satisfaction and GPA was examined using Spearman’s rank correlation coefficient. A p-value of less than 0.05 was considered statistically significant.

To categorise continuous satisfaction and GPA scores into meaningful groups, Bloom’s Cut-Off Point framework [7] was employed in this study (see Table 1). For evaluating academic performance, students’ final course GPAs (on a

4.0 scale) were classified as follows: Excellent (above 3.50), Satisfactory (2.80–3.50), and Poor (below 2.80). This approach enabled a more nuanced assessment of academic achievement, moving beyond a simple pass/fail distinction. It also allowed for identifying students who may benefit from additional educational support, as well as those excelling academically.

Similarly, learning satisfaction was assessed using the Bloom’s Cut-Off Point framework, which grouped responses into three categories: high satisfaction (80%–100%), moderate satisfaction (60%–79%), and low satisfaction (below 60%). This method provided clearer insight into students’ perceptions of their online learning experiences and helped pinpoint areas where instructional quality and engagement could be improved.

Ethical consideration

Ethical approval for this study was granted by the Universiti Teknologi MARA (UiTM) Research Ethics Committee (Reference: 500-FSK/PT.23/4). Participation was entirely voluntary, with informed consent obtained from all participants prior to their involvement. All procedures in this study adhered to ethical standards, and participants’ anonymity was maintained. Informed consent was secured from all, ensuring their voluntary participation and confidentiality of their responses.

Results

The majority of participants were female (82.3%, $n = 135$) with a male-to-female ratio of 1:5 (Table 2). Most participants reported using laptops (26.2%, $n = 43$) or tablets (21.3%, $n = 35$) as their primary device for online learning. More than half (63.4%, $n = 104$) experienced a financial burden due to ODL, and most rated their internet connection as average (62.2%, $n = 102$).

Level of Learning Satisfaction

The findings in Table 3 provide a detailed overview of students' level of learning satisfaction with their online distance learning (ODL) experiences. Overall, the results indicate that most students reported moderate satisfaction across various aspects of learning, with certain areas showing clear challenges.

Domain 1: Student Readiness and Perception of the Learning Environment

In the student readiness and perception of the learning environment, a large majority of students (78.7%) agreed that they could organise their time effectively for learning, while 69.5% felt that ODL helped them become more organised. However, many students (76.2%) also expressed the need for a tutor to explain difficult concepts, suggesting that independent learning through ODL may not fully meet their academic needs. When asked about safety and comfort, 61% agreed that they felt safer learning online than in a traditional classroom, while 71.3% reported that studying from home improved their academic performance. This reflects a positive adaptation to online learning, though it may also indicate that comfort does not necessarily translate to higher satisfaction or engagement.

Domain 2: Technological and Institutional Support

In terms of technological and institutional support, most students were generally satisfied with the university's preparedness and accessibility. For example, over 80% agreed that registration procedures, course organisation, and website navigation were satisfactory. However, some respondents still perceived limitations in system design and accessibility, which may have affected their overall satisfaction.

Domain 3: Educator–Student Interaction

Regarding educator–student interaction, 61% agreed that there was adequate interaction among participants, although about one-fourth (25%) felt that digital learning tools contributed to lower academic performance.

Domain 4: Course Content and Critical Challenges

Finally, under course content and critical challenges, nearly all respondents (95.1%) agreed that the high volume of online assignments and assessments caused confusion and frustration. Similarly, most students found online quizzes and exams stressful and less comfortable than in-person assessments. Many (78%) also emphasized that face-to-face interaction significantly enhances learning outcomes.

Students' Learning Satisfaction Level and Academic Performance

Most students reported a moderate level of learning satisfaction (70.7%), while nearly one-third (29.3%) expressed low satisfaction with their online distance learning experience. The overall mean score of 1.71 ± 0.46 supports this finding, indicating that students generally felt only moderately satisfied with the quality and effectiveness of their learning during the ODL period (Table 4). These results suggest that while many students were able to adapt to online learning, a considerable proportion still faced challenges that affected their satisfaction. Factors such as limited interaction, increased workload, or technological difficulties may have contributed to this outcome. Overall, the findings highlight the need for ongoing improvements in instructional design, communication, and support systems to enhance students' learning experiences in future online or blended learning environments.

The majority of students achieved a satisfactory GPA (60.4%), while 34.7% achieved an excellent GPA. Only 4.9% of students were categorised as having poor academic performance. The overall mean GPA was 3.37 ± 0.32 , indicating that most students maintained good academic standing during the online distance learning period (Table 4)

Association between Learning Satisfaction and Grade Point Average (GPA)

An analysis utilising Spearman's rank-order correlation was performed to investigate the association between students' learning satisfaction and their academic performance, as indicated by GPA. The findings demonstrated a very weak positive correlation between overall learning satisfaction and GPA ($r_s = 0.033$, $p = 0.672$); however, this association was not statistically significant (Table 5).

Further analysis of the four satisfaction domains also showed no significant associations with GPA. Domain 1 (student readiness and perception of the learning environment) demonstrated a weak negative correlation ($r_s = -0.055$, $p = 0.484$), Domain 2 (technological and institutional support) a weak positive correlation ($r_s = 0.081$, $p = 0.304$), Domain 3 (educator–student interaction) a negligible negative correlation ($r_s = -0.021$, $p = 0.789$), and Domain 4 (course content and critical challenges) a weak positive correlation ($r_s = 0.024$, $p = 0.759$).

Since all p -values were above 0.05, these findings indicate no statistically significant associations between learning satisfaction and GPA across all domains. This means that while students' satisfaction levels varied, these differences did not correspond to changes in academic performance. Other factors, such as motivation, learning environment, personal adaptability, and external stressors during the COVID-19 pandemic, may have had a greater impact on students' academic outcomes than satisfaction alone.

Discussion

Overview of findings

This study investigated the impact of online distance learning (ODL) on nursing students' learning satisfaction and academic performance during the COVID-19 pandemic. The results revealed that while most students achieved satisfactory academic outcomes, their overall learning satisfaction was only moderate. The findings suggest that although nursing students adapted to online learning, several challenges limited their satisfaction with the ODL experience. In contrast, a study conducted in South Korea reported that nursing students' satisfaction with online classes was a significant predictor of their academic achievement, indicating that higher satisfaction levels were associated with better performance outcomes [8]. This finding differs from the present study, where no significant association was observed between satisfaction and academic performance, suggesting that contextual and cultural factors may influence how satisfaction translates into learning success.

Sociodemographic Profile and Learning Context

Most participants were young female nursing students aged 18–25 years, which aligns with the typical demographic profile of nursing programs. The majority relied on laptops or tablets as their primary learning devices, and many reported average internet stability. More than half also experienced financial strain due to ODL, reflecting the economic challenges students faced during the pandemic.

These contextual factors may have influenced students' perceptions of ODL. Financial difficulties and unstable internet connections could lead to stress and learning disruptions, potentially lowering satisfaction levels. Similar findings were reported in other studies, where socioeconomic and technological barriers significantly influenced students' engagement

and satisfaction with online learning. In an Indian study, nursing students identified poor internet connectivity and limited access to reliable devices as major obstacles that hindered effective participation and reduced satisfaction with online learning [9]. Likewise, an Iranian study found that most nursing students relied on personal mobile phones for classes and frequently experienced moderate internet instability and physical strain, all of which contributed to lower satisfaction levels [10].

Learning Satisfaction and Perceived Challenges

The overall moderate satisfaction level (70.7%) suggests that students recognised certain benefits of ODL, particularly its flexibility and safety. Most students agreed that ODL allowed them to organise their learning time and feel safer studying from home. However, the results also highlight several issues that hindered satisfaction. A large proportion (77.2%) indicated the need for a tutor to clarify difficult topics, showing that independent online learning may not fully meet the academic demands of nursing education. The majority also expressed frustration with the volume of online assignments and assessments, with 95.1% stating that excessive workload caused confusion and stress. These findings indicate that while ODL enabled learning continuity during the pandemic, its design may not have been fully optimized for nursing students, who require practical, interactive, and guided learning experiences.

Overall, these findings suggest that while students adapted reasonably well to ODL and recognized its benefits in flexibility and safety, they also encountered challenges related to workload, interaction quality, and the need for stronger academic and emotional support. Additionally, although most respondents were satisfied with the university's technological preparedness and accessibility, some still reported challenges related to system usability and course navigation

[11,12]. These technical barriers could contribute to reduced engagement and motivation.

Educator–Student Interaction

Interaction is a crucial component of effective nursing education. In this study, 61% of students agreed that there was adequate interaction during ODL. However, nearly one-fourth believed that the use of digital learning tools contributed to lower academic performance [13]. This suggests that while online communication existed, it may not have been as effective or personal as traditional classroom engagement.

Previous research supports this finding, emphasising that the quality, not just the frequency of online interaction, affects satisfaction and performance. Limited real-time discussions, delayed feedback, and reduced peer collaboration can weaken students' connection to their instructors and classmates, ultimately affecting their learning experience. Similarly, Wang et al. (2023) [14] highlighted that the perceived quality of online interaction strongly influences students' satisfaction and overall learning experience.

Academic Performance

Despite moderate satisfaction, most students performed well academically, with a mean GPA of 3.37 ± 0.32 . The majority (60.4%) achieved satisfactory performance, and one-third (34.7%) performed excellently. This indicates that students were able to maintain their academic standards despite the challenges of remote learning. The results may reflect nursing students' resilience, discipline, and adaptability in managing academic responsibilities during a crisis.

However, the small proportion (4.9%) with poor performance indicates that certain students may have struggled with online assessments or lacked sufficient support. Institutions should identify these students early and provide targeted

academic assistance to prevent further learning gaps.

These findings suggest that, despite the challenges associated with online distance learning, most students were able to perform well academically. The relatively high mean GPA reflects effective adaptation to online learning environments, although the small percentage of students with poor performance indicates that some may still require additional academic guidance and support.

Association Between Learning Satisfaction and GPA

The correlation analysis found no statistically significant relationship between total learning satisfaction and GPA ($r_s = 0.033$, $p = 0.672$). Similarly, no significant associations were found across the four satisfaction domains. This implies that satisfaction did not predict academic success during ODL.

These results align with other studies, Yılmaz (2023) [13] and Akpen et al. (2024) [15], suggesting that while satisfaction contributes to engagement and persistence, academic performance is more strongly influenced by other factors such as motivation, study habits, self-efficacy, and external stressors. The pandemic environment may have intensified these external factors, making satisfaction less influential on measurable performance outcomes.

This suggests that students' overall satisfaction with online distance learning (ODL) was not meaningfully related to their academic performance.

Comparison with Previous Studies

The findings are consistent with Ruiz-Grao et al. (2022) [16], AlOsta et al. (2023) [17], Kanagaraj et al. (2022) [18], and Ahmed (2022) [19], showing moderate satisfaction levels among nursing students during COVID-19 online learning. For example, research across various institutions reported that while students valued

flexibility and safety, they often faced technological challenges, limited interaction, and heavy workloads.

Likewise, the absence of a significant correlation between satisfaction and GPA echoes findings from other higher education studies [13], suggesting that high-performing students may succeed regardless of satisfaction levels due to strong intrinsic motivation and adaptability.

Implications for Nursing Education

Continuous training in digital literacy for both students and educators is essential. Strengthening technological skills can reduce frustration, improve participation, and enhance learning satisfaction in online and blended environments. Enhancing academic and technical support is essential for institutions to provide students with dependable access to technology and a stable internet connection. Academic support mechanisms such as virtual tutoring, peer mentoring, and regular feedback sessions can be invaluable for those who find independent learning challenging.

Educators should aim to improve instructional design and develop online courses that strike a balance between flexibility and structured interaction. By integrating multimedia simulations, case-based learning, and a series of smaller, more manageable assessments, engagement can be increased and student stress reduced.

Regular virtual meetings, engaging discussion forums, and personalised feedback are crucial for fostering a sense of connection among students and their educators. When students feel recognized and supported, their motivation and satisfaction tend to increase, even in online learning. However, it is important to understand that maintaining engagement is just one aspect. Students' overall well-being also needs attention. Many students struggle with financial challenges and the stress of continuous assessments, which can adversely affect their mental health. Universities can make a significant impact by

providing both emotional and financial assistance. Simple initiatives like accessible counselling services, peer support groups, and wellness programs can greatly help students manage stress and maintain their mental well-being. Additionally, it is important for both students and educators to feel confident and equipped to utilize digital tools effectively.

Ongoing training in digital literacy can reduce frustration, build confidence, and enhance the online learning experience for everyone. When a sense of connection, well-being, and digital proficiency align, online and blended learning can truly promote students' development and success.

Strengths and Limitations of the Study

This study offers important insights into nursing students' academic performance and satisfaction with online distance learning (ODL), providing baseline evidence to support the policy for future endeavours to structure online distance learning programs.

The cross-sectional design limits assessment of changes or causality. One limitation of the study is the use of non-probability sampling for participant selection. This approach may limit the generalisability of the findings, as the sample may not fully represent the broader nursing student population. Consequently, caution should be exercised when interpreting the results and applying them to other contexts. The sample was restricted to certain institutions and regions, affecting generalisability, and uncontrolled factors, such as access to technology and home environments, may have impacted outcomes.

Conclusion

This study revealed that nursing students demonstrated satisfactory academic performance during online distance learning, despite reporting

only moderate levels of learning satisfaction. The absence of a significant association between satisfaction and GPA suggests that academic success in ODL may depend more on motivation, adaptability, and institutional support than satisfaction alone.

For future nursing education, integrating well-structured blended learning approaches—combining online and face-to-face methods—may offer the most effective balance between flexibility, engagement, and practical skill development.

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Conflict of interest

The authors declare that there are no conflicts of interest related to this study.

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Authors' contributions

MZA conceptualised the study, led the literature search, data acquisition, data analysis, statistical analysis, manuscript preparation, and manuscript editing. All authors reviewed and approved the final version of the manuscript.

Table 1. Bloom Cut-Off Point

No	Category	Range of Scores
Section A: Grade Point Average (GPA)		
1	Excellent	Above 3.50
2	Satisfactory	2.80-3.50
3	Poor	Below 2.80
Section B: Learning Satisfaction		
No	Category	Range of Scores
1	High Satisfaction	80 – 100
2	Moderate Satisfaction	60 – 79
3	Low Satisfaction	20 - 59

Table 2. Sociodemographic Profile of Participants (N = 164)

Variable	Category	n (%)
Gender	Female	135 (82.3)
	Male	29 (17.7)
Age	18–25 years	153 (93.3)
	>25 years	11 (6.7)
Semester	3	26 (15.9)
	4	123 (75.0)
	5	15 (9.1)
Device Use for Online Learning	iPad	32 (19.5)
	Tablet	35 (21.3)
	iPhone	29 (17.7)
	Android phone	25 (15.2)
	Laptop	43 (26.2)
Financial burden	Yes	104 (63.4)
	No	60 (36.6)
Stability of the Internet Connection	Good	49 (29.9)
	Average	102 (62.2)
	Poor	13 (7.9)

Table 3. The Level of Learning Satisfaction

No	Statement	Frequency (%)				Mean ± SD
		Strongly Disagree	Disagree	Neutral	Agree	
Domain 1: Student Readiness and Perception of the Learning Environment						
1.	I can organize the time for effective learning.		12(7.3)	129 (78.7)	23 (14.0)	
2.	ODL helped me organise.	2 (1.2)	20(12.2)	114 (69.5)	28 (17.1)	
3.	I need a tutor to explain things I do not understand.		3 (1.8)	125 (76.2)	36 (22)	15.98 ± 1.75
4.	I feel safer being able to learn online than in a classroom.			100 (61.0)	64 (39)	
5.	My academic performance is better when I study at home.	2(1.2)	2(1.2)	117(71.3)	43(26.2)	
Domain 2: Technological and Institutional Support						
6.	In my opinion, most people have no problem using the online learning platform.		3 (1.8)	109 (66.5)	52 (31.7)	
7.	My university well prepared technologically to online teaching.		4 (2.4)	116 (70.7)	44 (26.8)	
8.	I was satisfied with the accessibility of departmental program personnel when needed.		5 (3.0)	139 (84.8)	20 (12.2)	
9.	I was satisfied with course registration procedures.		6 (3.7)	132 (80.5)	26 (15.9)	
10.	I was satisfied with the organizational structure of the course site.		3 (1.8)	137 (83.5)	24 (14.6)	31.32 ± 2.90
11.	I was satisfied with the relevance of course information.		7 (4.3)	133 (81.1)	24 (14.6)	
12.	The website was consistent and well-designed.		7 (4.3)	133 (81.1)	24 (14.6)	
13.	I was satisfied with the navigation within the course website.		3 (1.8)	131 (79.9)	30 (18.3)	
14.	I was satisfied with download times of course pages and resources.		6 (3.7)	132 (80.5)	26 (15.9)	
15.	I participated more in the online course than in a traditional classroom setting.	1 (6)	18 (11.0)	122 (74.4)	23 (14.0)	
Domain 3: Educator–Student Interaction						
16.	There was more interaction between all involved parties in the online course.	7 (4.3)	38 (23.2)	100 (61.0)	19 (11.6)	5.87 ± 1.11

17.* Use of digital learning tools is responsible for my low academic performance	41 (25.0)	123 (75.0)	
Domain 4: Course Content and Critical Challenges			
18.* The volume of assignments via e-learning led to confusion, frustration, and poor performance.	8 (4.9)	156 (95.1)	
19. Face-to-face interaction contributes significantly to boosting students' academic achievement.	36 (22.0)	128 (78.0)	8.90 ± 0.99
20.* Taking quizzes and exams online from home was not comfortable and made me nervous	8 (4.9)	156 (95.1)	

*Footnote: Items with * marks are calculated in reverse scoring*

Table 4. Students' Learning Satisfaction Level and Overall Distribution of Students' Grade Point Average (GPA)

Items	Category	Frequency	Percent	Mean ± SD
Students' Learning Satisfaction Levels	High Satisfaction	0	0	
	Moderate satisfaction	116	70.7	1.71 ± 0.46
	Low satisfaction	48	29.3	
	Poor	8	4.9	
Students' GPA	Satisfactory	99	60.4	3.37 ± 0.32
	Excellent	57	34.7	

Table 5. Association Between Total Learning Satisfaction Score and Grade Point Average (GPA)

Items	N	rs (Spearman's rho)	p-value
Learning Satisfaction Total Score vs GPA	164	0.033	0.672
Domain 1: Student Readiness and Perception of the Learning Environment	164	-0.055	0.484
Domain 2: Technological and Institutional Support	164	0.081	0.304
Domain 3: Educator–Student Interaction	164	-0.021	0.789
Domain 4: Course Content and Critical Challenges	164	0.033	0.672

Footnote: *p*-value < 0.05 is statistically significant.

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