

Determinants of Condom Use among Undergraduates: Factors Influencing Condom Use and Demographic Correlates in Rivers State University

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ABSTRACT

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Background: Sexually transmitted infections (STIs) remain a major public health concern among young adults in Nigeria, with inconsistent condom use contributing significantly to transmission of HIV, gonorrhoea, chlamydia, and other infections. University undergraduates, experiencing increased sexual autonomy and peer influence, represent a high-risk group despite generally high awareness of preventive measures.

Objective: This study examined the determinants of condom use, key influencing factors, and demographic correlates (gender, age, and level of study) among undergraduate students at Rivers State University, Port Harcourt, Nigeria.

Methods: A descriptive cross-sectional survey design was employed. Using Yamane's formula, a sample of 395 students was drawn from five randomly selected departments across five faculties (total population 5,062) via multi-stage simple random sampling. Data were collected through a structured electronic questionnaire (Google Forms) distributed via departmental platforms. The instrument comprised four sections: demographics, awareness of condoms/STIs, attitudes toward condom use, and influencing factors. Descriptive statistics (frequencies, percentages, means) and a 4-point Likert scale (criterion mean 2.50) were used for analysis, with Pearson's product-moment correlation applied to test relationships between demographics and awareness/attitude.

Results: Respondents were predominantly female (58.0%), aged 21–25 years (44.6%), and in 300–400 levels (60.0%). Awareness of condoms as an effective STI prevention method was high and independent of gender and age. Key influencing factors included affordability/accessibility (mean 2.59) and availability of awareness programmes (2.52), but significant barriers were embarrassment in purchasing/carrying condoms (2.62), reduced pleasure (2.54), inconvenience/spontaneity disruption (2.52), and discomfort discussing use with providers (2.47). Grand mean of 2.54 indicated overall significance of these factors. Level of study showed a positive, statistically significant correlation with favourable attitudes ($p \leq 0.01$), particularly negotiation confidence and support for open discussion.

Conclusion: While awareness is widespread, psychosocial and situational barriers hinder consistent condom use. Level of study emerged as a key positive correlate. Targeted campus interventions—peer education, free condom distribution, curriculum integration, and youth-friendly services—are recommended to bridge the knowledge-practice gap and enhance STI prevention among undergraduates.

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Condom use, STI prevention, awareness, knowledge, undergraduate students, Rivers State University, Nigeria

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1. Introduction

Sexually transmitted infections (STIs) represent a major global public health challenge, disproportionately affecting young adults aged 15–49 years. According to the World Health Organization (WHO), more than 1 million curable STIs—such as chlamydia, gonorrhoea, syphilis, and trichomoniasis—are acquired daily worldwide, resulting in an estimated 374 million new infections annually as of 2020 (the most comprehensive recent global estimate for these four curable STIs). These infections often remain asymptomatic, facilitating silent transmission and contributing to long-term complications including infertility, adverse pregnancy outcomes, and increased HIV susceptibility. In parallel, the HIV epidemic persists, with approximately 40.8 million people living with HIV globally in 2024, including 1.3 million new infections that year. Young people, particularly adolescents and young adults, bear a substantial burden, with sub-Saharan Africa accounting for the majority of cases among this demographic.

In sub-Saharan Africa, including Nigeria, the intersection of high STI/HIV prevalence and youth sexual activity underscores the urgency of effective prevention strategies. Nigeria, Africa's most populous nation, reports an adult HIV prevalence of approximately 1.3–1.4% among those aged 15–49 years, with an estimated 1.9 million people living with HIV. The South-South geopolitical zone, encompassing Rivers State, exhibits elevated prevalence rates (around 3.1% in some zonal estimates), driven by factors such as oil-related migration, urbanisation, and socioeconomic dynamics. Adolescents and young adults in this region face heightened vulnerability due to early sexual debut, multiple partnerships, and inconsistent protective behaviours.

University undergraduates represent a critical at-risk group, as tertiary education often coincides with increased autonomy, peer influence, experimentation, and access to sexual opportunities amid limited comprehensive sexual health education or youth-friendly services. Studies across Nigeria consistently document high awareness of condoms as an effective barrier method for STI/HIV prevention, yet inconsistent or low usage persists. For instance, Oranu *et al.* (2020) evaluated condom use among university undergraduates in Port Harcourt, Nigeria (near Rivers State University), finding 97.8% awareness of male condoms but only moderate consistent use, with a significant proportion engaging in unprotected sex despite knowledge. Similarly, Ajayi *et al.* (2017) explored risky sexual behaviour among Nigerian female university students, revealing perceptions that sex "is sweet without condom," highlighting pleasure-related barriers and cultural norms influencing non-use.

Broader Nigerian research reinforces these patterns. Oharume (2020) assessed knowledge, sexual behaviours, and STI risk perception among polytechnic students in Ibadan, noting gaps between awareness and preventive practices. Oluwole *et al.* (2020) examined unmarried youths in Lagos, reporting suboptimal attitudes and practices toward STI prevention despite general knowledge. Osagiede *et al.* (2016) evaluated knowledge and sexual behaviour in a Nigerian tertiary institution, identifying inconsistencies in condom adoption linked to embarrassment, partner dynamics, and perceived reduced pleasure. Anyanwu and Fulton (2017) focused on young adults' perceptions of condom effectiveness for STI prevention, while Asa and Nkan (2015) highlighted barriers among rural youths in Akwa Ibom State, including stigma and access issues—patterns that extend to urban university settings.

Regional studies in Rivers State further contextualise the issue. Ogbonna *et al.* (2024) investigated risk and protective factors influencing condom use among adolescents, identifying personal, social, and environmental determinants that mirror challenges faced by undergraduates transitioning from secondary to tertiary education. Olaniran *et al.* (2012) employed a mixed-methods approach to factors influencing condom use among Nigerian undergraduates, emphasising psychological and situational barriers.

Comparative evidence from Africa supports these findings. Otim *et al.* (2024) reported a 53.7% condom use rate among Gulu University undergraduates in Uganda, associated with relationship type, HIV testing access, and partner negotiation. McCarthy *et al.* (2024) examined personal factors influencing female students' condom use in a higher education institution, underscoring gender-specific dynamics. Earlier international work, such as Beckman *et al.* (1996), explored attitudes toward condoms among U.S. college students, revealing enduring themes of inconvenience and embarrassment that persist cross-culturally.

In Nigeria, additional epidemiological insights include high HIV seroprevalence among higher education students in Southeast Nigeria (Nwabunnia *et al.*, 2014) and statistical analyses of reported STI cases (Ladeniyi *et al.*, 2017), alongside Awofala and Ogundele (2016) on national HIV epidemiology. Obembe *et al.* (2017) assessed confidence in female condom use among tertiary students in a metropolitan city, noting low uptake due to limited promotion.

Despite progress in awareness campaigns and condom distribution, gaps in consistent use persist among Nigerian undergraduates, exacerbated by psychosocial barriers (e.g., stigma in purchasing/carrying condoms), relational factors (e.g., trust in partners), and structural issues (e.g., affordability and availability in campus settings). Rivers State University (RSU), located in Port Harcourt—a major urban centre in the high-prevalence South-South zone—presents a unique context for investigation, given its diverse student population and limited institution-specific data on sexual health behaviours.

This study addresses this gap by examining the determinants of condom use, influencing factors (awareness, attitudes, barriers), and demographic correlates (gender, age, level of study) among RSU undergraduates. By building on localised evidence from Port Harcourt and Rivers State, while situating findings within national and global trends, the research aims to inform targeted campus-based interventions—such as peer education, free condom access, and integrated sexual health curricula—to enhance consistent condom use, reduce STI/HIV transmission, and promote safer sexual practices among this vulnerable population.

2. Methodology

2.1 Research Design

This study employed a descriptive cross-sectional survey design. This approach was considered appropriate because data were collected from the selected sample using structured questionnaires, ensuring that responses directly addressed the research questions. The design enabled the researchers to describe existing information, current events, and students' attitudes toward the prevention of sexually transmitted infections (STIs) through condom use.

2.2 Area of Study

The research was carried out at Rivers State University, situated in Port Harcourt, the capital city of Rivers State in the South-South geopolitical zone of Nigeria. The institution was selected due to its accessibility, availability of relevant resources, and the feasibility of effectively conducting the study within the available timeframe.

2.3 Population of the Study

The study population comprised students from five randomly selected departments across five randomly selected faculties of Rivers State University, with a total population of 5,062 students. The breakdown includes: 804 students from the Department of Animal and Environmental Biology (100–400 level) in the Faculty of Science; 339 students from the Department of Nursing (100–400 level) in the Faculty of Basic Medical Sciences; 750 students from the Department of Accountancy (100–400 level)

in the Faculty of Management Sciences; 2,531 students from the Faculty of Law; and 638 students from the Department of Chemical/Petrochemical Engineering (100–500 level) in the Faculty of Engineering.

2.4. Sample Size.

The sample size consists of 395 students of Rivers State University from different faculties.

Using Yamane's formula, the Sample size (S) is given by: $S = n/1 + n(e)^2$

Where S = sample size.

n = the population of the study

e = margin error in the calculation (0.05)

$$S = 5062/ 1 + 5062 (0.05)^2$$

$$S = 5062/ 1 + 5062 (0.05 \times 0.05)$$

$$S = 5062/ 1 + 5062 (0.0025)$$

$$S = 5062/ 1 + 12.66$$

$$S = 5062/ 13.66$$

$$S = 395.$$

2.5. Sampling Technique

The sampling technique used for this research work is the simple random sampling. The basis for this technique is hinged on the fact that the whole population cannot be examined, and that it will contain a fair representation of the population.

2.5.1. Inclusion Criteria.

1. Undergraduate students in 100 to 500 level in the departments of Animal and Environmental Biology, Chemical/Petrochemical Engineering, Accountancy, Nursing and Faculty of Law.
2. Undergraduate Students available and willing to participate in the study.

2.5.2. Exclusion Criteria

Post graduate students and students who are unavailable and unwilling to participate in study.

2.6. Instruments for Data Collection

The use of electronic survey (questionnaires) formed the major instrument used in data collection. The questionnaire was structured to allow respondents select the responses they consider most appropriate. The questionnaire is divided into four sections. Section A contained the demographic data of the respondents, while section B, C and D is made up of the research questions. Section B contained awareness of respondents about condoms and STIs; Section C contained attitude of respondent towards condom use; Section D contained the factors that influence the use of condom in preventing STIs.

2.7. Validity of the Instrument

To ensure the face and content validity of the questionnaire, the research instrument was scrutinized and judged by the supervisor for appropriateness of each item of the Instrument. The supervisor's comment was used to obtain final items which was further subjected to content validity to ensure that the content of the area which the instruments are intended to cover.

2.8. Reliability of the Instruments.

The test re-test reliability study was adopted to establish the reliability of the Instrument. The instrument was administered twice within the interval of two weeks and the two sets of data collected was correlated using Pearson Product Moment Correlation which is aimed at establishing reliability coefficient.

2.9. Method of Data Collection.

In order to retrieve the data for this study, the researcher prepared an electronic questionnaire using Google forms and distributed to the various class electronic platforms of the five selected departments of the various levels. A letter of permission to conduct the study in various faculties was prepared. The researcher constructed a questionnaire checklist, approved by the supervisor, after which the questionnaires were administered. The researcher explained to the respondents the importance of their response to the study and clarified terms to the respondents so they can answer the questionnaire with full knowledge of their responsibility as the subjects of the study. The researcher used multi-stage simple random sampling technique, the researcher believed that this technique was suitable for choosing sample for the research. After the respondents answered the questionnaire, it was collected and tailed for data interpretation. Based on the data the researcher came up with conclusion and recommendations for this study.

2.10. Procedure for Data Analysis.

Objective (i) was achieved using descriptive statistics i.e. tabular presentation of frequency distribution and percentages. Objective (ii), (iii) & (iv) was achieved through 4-point Likert scale, the hypothesis was analyzed using Pearson's correlation.

Model Specification.

$$r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

Where r = correlation coefficient

n = number of respondents

x = Demographic characteristics of students.

Y = Awareness/attitude of students towards the use of condom in preventing STIs.

2.10.1 Four-Point Likert Scale Rating Technique

A four-point Likert scale rating technique was employed to assess students' awareness and attitudes toward condom use in the prevention of sexually transmitted infections (STIs). The instrument was structured on a four-point response format to eliminate neutrality in responses, as noted by Umoinyang (2014), thereby encouraging participants to take a definite position. The response options were scored as follows: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1.

To determine the decision benchmark, the mean of the scale values was calculated as follows: $(4 + 3 + 2 + 1) = 10$; $10 \div 4 = 2.50$. Using an interval of 0.05, the upper cut-off point was established at 2.55 ($2.50 + 0.05$), while the lower cut-off point was set at 2.45 ($2.50 - 0.05$). Based on this criterion, mean scores below 2.45 ($MS < 2.45$) were interpreted as not important. Mean scores between 2.45 and 2.55 ($2.45 \leq MS \leq 2.55$) were regarded as important, whereas mean scores above 2.55 ($MS > 2.55$) were considered very important.

2.11 Ethical Considerations

Ethical approval for the study was obtained through an official letter issued by the institution, which was presented to the deans of the selected faculties to seek permission to conduct the research. Informed consent was obtained from all participants prior to data collection. Participation was voluntary, and respondents were not compelled to answer any question against their will. The researcher ensured that all personal information provided by participants remained confidential and anonymous during and after the study. All relevant ethical protocols were strictly adhered to throughout the research process.

3. Results

3.1 Socio - Demographic Data of the Respondents

This section captures the undergraduates gender, age and level. The result is presented in table 1 using frequencies, percentages and means.

Table 1: Frequency Distribution of the Respondents according to their Demographic Characteristics (n=395)

Variables	Category	Frequency	Percentage (%)	Mean
Gender	Female	229	58.0	
	Male	166	42.0	
	Total	395	100.0	
Age (Years)	16-20	139	35.2	18 years
	21-25	176	44.6	
	26-30	53	13.4	
	31 and above	27	6.8	
	Total	395	100.0	
Level	100	38	9.6	
	200	70	17.7	
	300	119	30.1	
	400	118	29.9	
	500	50	12.7	
	Total	395	100.0	

Source: Field Survey, 2023.

3.1.1 Gender of the respondents

The results from Table 1 revealed that 58% of the students interviewed were females while 42% were males. The result points to the fact there might be more females than males in the institution (Rivers State University).

3.1.2 Age of the respondents

About 35.2% of the respondents (students) were within the age bracket of 16-20years, 44.6% of the respondents were within the age bracket of 21-25years, 13.4% were within the age bracket of 26-30years while 6.8% were above 31years. The mean age of 18years was reported. This indicated that the average age of undergraduates in the institution was 18years.

3.1.3 Undergraduate level of the respondents

Analysis of collected data also showed that 9.6% of respondents were in their 100level, 17.7% were in their 200 level, 30.1% were in their 300 level, 29.9% were in their 400level while 12.7% of the respondents were in their 500 level. The result do not however, represent the actual population distribution of the different levels in the institution but offers insight to the population distribution of those interviewed.

3.2 Factors Influencing the Use of Condom in Prevention of STIs

Table 4.4 showed the factors influencing the use of Condom in prevention of STIs in Rivers State University using sum, mean score and remark.

The results from Table 2 showed the respondents disagreement (mean score less than 2.50) with that fact that discussing condom use with healthcare provider feels embarrassing and uncomfortable (2.47). They however, agreed that formal education or awareness programs regarding STIs and condom use are accessible and available (2.52). The respondents agreed that Condom is inconvenient and disrupts the spontaneity of sexual encounter (2.52) and that Condoms are very affordable and easily accessible (2.59). They also expressed concerns about the potential negative side effects, such as reduced pleasure, when using condom (2.54) and purchasing and carrying condom is embarrassing and uncomfortable (2.62). Overall, the grand mean of 2.54 indicated that the factors influencing the use of Condom in prevention of STIs in the study area were significant.

Table 2: Factors Influencing the Use of Condom in Prevention of STIs

Factors	Strongly agree (4)	Agree (3)	Disagree (2)	Strongly disagree (1)	Sum	Mean	Remark
Discussing condom use with healthcare provider feels embarrassing and uncomfortable.	48	124	187	36	974	2.47	Disagree
Formal education or awareness programs regarding STIs and condom use are accessible	42	147	181	25	996	2.52	Agree
Condom is inconvenient and disrupts the spontaneity of sexual encounter.	58	117	193	27	996	2.52	Agree
Concerned about the potential negative side effects, such as reduced pleasure, when using condom.	53	144	161	37	1003	2.54	Agree
Condoms are very affordable and easily accessible	52	159	156	28	1025	2.59	Agree
Purchasing and carrying condom is embarrassing and uncomfortable	54	136	205	0	1034	2.62	Agree
Grand mean = 2.54							

Source: Field Survey, 2023.

Criterion Mean: ≥ 2.50

3.3 Correlation Analysis of the Relationship Between the Demographic Characteristics of the Students and Their Attitude/Awareness of the Use of Condom in Prevention of STIs

Table 3 shows summary statistics of the relationship between the demographic characteristics of the students and their attitude/awareness of the use of Condom in prevention of STIs in Rivers State University.

The correlation analysis showed highly significant ($p \leq 0.01$) relationship between the demographic characteristics of respondents and their attitude/awareness of the use of Condom in prevention of STIs. The result showed that the students, irrespective of gender and age were aware of the use of Condom in prevention of STIs while the undergraduates' level of education had significant and positive correlation with their attitude/awareness of the use of Condom in prevention of STIs. This indicated that, as the students' awareness increases with their level of education.

Table 3: Correlation Analysis of the Relationship Between the Demographic Characteristics of the Students and Their Attitude/Awareness of the Use of Condom in Prevention of STIs

Awareness/Attitudes	Gender	Age	Level
Condoms are affective method for preventing STIs	-	-	0.000**
It is important to use condoms when engaging in sexual activity to prevent the spread of STIs	-	-	0.211
Condom makes one feel more confident and in control of their sexual health	-	-	0.000**
Condoms can provide adequate protection against STIs	-	-	0.223
There are different types and brand of condoms available and they are all effective	-	-	0.891
You have confidence in your ability to negotiate condom use with sexual partner(s)	-	-	0.002**
Using condom consistently shows responsibility towards one's sexual health	-	-	0.657
The use of condom should be more openly discussed and promoted in sexual education	-	-	0.006**

** Correlation is significant at the 0.01 level (2-tailed).

- Means the respondents had the awareness irrespective of their demographic status

Source: Field Survey, 2023.

4. Discussion

The findings of this study among undergraduate students at Rivers State University (RSU) reveal a complex picture of condom use for STI prevention. While awareness and positive attitudes toward condoms as an effective preventive tool were broadly high—irrespective of gender and age—the translation into consistent behavior remains hindered by significant barriers. The grand mean score of 2.54 on the 4-point Likert scale for influencing factors indicates that elements such as embarrassment in purchasing or carrying condoms (mean 2.62), perceived reduction in sexual pleasure (2.54), inconvenience and disruption of spontaneity (2.52), and discomfort in discussing condom use with healthcare providers (2.47) are salient concerns among respondents. These align with broader patterns in Nigerian tertiary institutions, where high knowledge coexists with suboptimal practice.

The high baseline awareness of condoms, unaffected by gender or age, mirrors findings from nearby settings. Oranu *et al.* (2020) reported exceptionally high awareness of male condoms (97.8%) among university undergraduates in Port Harcourt, yet only 58.5% used them consistently, with a significant proportion engaging in unprotected sex despite knowledge. Similarly, this study's respondents agreed that condoms are affordable and accessible (mean 2.59) and that formal education/awareness programs on STIs and condom use are available (2.52), suggesting effective dissemination of information through campus channels. However, psychological and situational barriers persist, echoing national trends where perceived pleasure loss and embarrassment undermine uptake (Ajayi *et al.*, 2017; Olaniran *et al.*, 2012).

The positive perception of accessibility and affordability in this study contrasts with some rural or resource-limited contexts but aligns with urban university environments like Port Harcourt. Nonetheless, the endorsement of embarrassment in purchasing/carrying condoms (highest mean at 2.62) and concerns over reduced pleasure highlight enduring psychosocial hurdles. Ajayi *et al.* (2017) captured this vividly among Nigerian female university students, where participants described sex as "sweet without condom," linking non-use to perceptions of diminished enjoyment, need to demonstrate trust/faithfulness in relationships, and cultural expectations around satisfying partners or future spouses. Such qualitative insights explain why, despite awareness, unprotected encounters remain common.

The significant positive correlation between level of study and favorable attitudes/awareness ($p \leq 0.01$ on items like confidence in negotiating condom use, feeling in control of sexual health, and support for open discussion in sex education) suggests that academic progression fosters greater self-efficacy and exposure to health messaging. Higher-level students (e.g., 300–500 levels, comprising ~72.7% of the sample) likely benefit from cumulative peer influence, maturity, and access to university resources. This finding is consistent with Otim *et al.* (2024), who reported higher condom use rates among senior students at Gulu University in Uganda (overall rate 53.7%), associated with factors like relationship type, HIV testing access, and negotiation skills. In contrast, gender and age showed no differential impact, indicating equitable knowledge spread across these demographics—unlike some studies where males report higher use (McCarthy *et al.*, 2024).

Comparatively, the barriers identified here resonate with regional evidence from Rivers State. Ogbonna *et al.* (2024) identified similar risk and protective factors among adolescents, including personal (e.g., attitudes), social (peer norms), and environmental influences on condom use, underscoring continuity from adolescence to young adulthood in tertiary settings. Broader Nigerian studies reinforce these patterns: Oharume (2020) noted gaps between STI knowledge/risk perception and preventive behaviors among polytechnic students; Oluwole *et al.* (2020) highlighted suboptimal practices among urban youths despite awareness; and Osagiede *et al.* (2016) linked inconsistencies to embarrassment and partner dynamics. Earlier work by Beckman *et al.* (1996) on U.S. college students similarly identified inconvenience and embarrassment as cross-cultural themes.

The grand mean of 2.54 (above the 2.50 criterion) confirms the overall significance of these factors, yet the persistence of barriers amid high awareness points to a knowledge-practice gap. This gap contributes to ongoing STI/HIV vulnerability among Nigerian undergraduates, as evidenced by high seroprevalence in some institutions (Nwabunnia *et al.*, 2014) and epidemiological patterns (Awofala & Ogundele, 2016; Ladeniyi *et al.*, 2017). Limitations of the study include reliance on self-reported data (susceptible to social desirability bias) and its cross-sectional nature, precluding causal inferences.

In conclusion, while RSU undergraduates demonstrate strong foundational awareness of condom efficacy for STI prevention, psychosocial barriers like embarrassment, pleasure concerns, and spontaneity disruption impede consistent use. The positive association with educational level offers a leverage point for interventions targeting lower-year students. These findings complement localized evidence (Oranu *et al.*, 2020; Ogbonna *et al.*, 2024) and underscore the need for multifaceted, campus-specific strategies to bridge the awareness-behavior divide and advance STI prevention in Nigerian tertiary education.

5. Conclusion

This study among 395 undergraduate students at Rivers State University shows high awareness of condoms as an effective STI prevention method, largely consistent across gender and age. Respondents viewed condoms as affordable and accessible (mean 2.59) and confirmed the availability of STI/condom awareness programmes (2.52). However, key barriers—embarrassment when purchasing or carrying condoms (2.62), perceived reduction in pleasure (2.54), inconvenience and loss of spontaneity (2.52), and discomfort discussing use with healthcare providers (2.47)—remain significant, with a grand mean of 2.54 indicating their overall influence.

Importantly, level of study showed a positive, statistically significant correlation with favourable attitudes ($p \leq 0.01$), particularly in negotiation confidence and support for open sexual health discussion, suggesting that academic progression enhances self-efficacy.

These findings align with local studies in Port Harcourt (Oranu *et al.*, 2020) and Rivers State (Ogbonna *et al.*, 2024), highlighting persistent knowledge-practice gaps in Nigerian tertiary settings.

Rivers State University should prioritise peer-led education, free condom distribution, curriculum-integrated sexual health training, and youth-friendly health services to promote consistent condom use, reduce STI/HIV transmission, and protect student health.

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