A comparative study of posttraumatic stress disorder in two post-conflict communities in Benue state Nigeria

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ABSTRACT

Background: The attendant long-term mental health consequence of the conflict of various kinds in Nigeria is yet to be thoroughly investigated. The Tiv-Fulani farmer-herdsmen crisis is one such conflict that occurred in 2013/2014 in Guma local government in Benue state.
Aims: This study seeks to find out some years after the crisis, the prevalence difference in posttraumatic stress disorder (PTSD) between a community (Uikpiam) with direct exposure to the conflict and another (Daudu) with indirect exposure, the pattern of distribution of PTSD symptoms and the associate factors of PTSD.
Methods: It is a cross-sectional one that employed a multi-stage cluster sampling method to select 413 participants; 135 from Uikpiam and 278 from Daudu. The study instruments administered included a questionnaire with some socio-demographic variables and an extract from the PTSD module of the Composite International Diagnostic Interview.
Results: The prevalence rate of PTSD was higher in Uikpiam (16.3%) when compared to Daudu (4.3%). A high proportion of sub-threshold symptoms of PTSD was recorded in both communities. An association was found between a lower educational qualification and PTSD ($\chi 2 = 8.373$; $p = 0.039$).
Conclusion: PTSD can be a prolonged mental ill-effect of crisis and proximity to trauma sites increases vulnerability including lower education. This study looked at PTSD only as an outcome of this crisis, but mental health adverse outcomes of the crisis may not be limited to this alone, hence the need for further investigations for relevant stakeholders to act.

1. Introduction

Post-Traumatic Stress Disorder (PTSD) can be defined as an abnormal reaction to an extremely stressful event that can be intense, prolonged, and sometimes delayed in onset [10]. Exposure to an extreme stressor can be direct or indirect. While direct exposure is described as one in which the individual is a victim or an eyewitness of the event, indirect exposure, on the other hand, involves learning about extreme trauma to relatives, friends, and loved ones, particularly trauma of a violent or accidental nature [4]. The fourth edition of the Diagnostic Statistical Manual (DSM IV) provides a good guide for the diagnosis of PTSD. It includes exposure to a traumatic event that the individual was a victim of, witnessed, was confronted with, or learnt about a loved one is stated as a requirement [4]. Furthermore, the person's response should be one of intense fear, helplessness, or horror. Symptoms include intrusive memories or unpleasant dreams of the event, avoidance of memories or reminders of events, and symptoms of hyperarousal. These symptoms should have been present for

about a month and should cause significant distress or impairment in functioning [4]. The symptom duration is one of the distinguishing features that set it apart from the tenth edition of the International Classification of Disease (ICD 10), in which the symptoms of PTSD should arise within six months of the trauma but can arise after six months if the symptoms are related to the trauma event [31].

However, PTSD is a frequent psychological aftermath of conflict [18].Prevalence rates of PTSD associated with conflicts have been found to vary across regions and studies. Rates in conflict regions have varied from as low as 0% in Iran [17] to 99% in Sierra Leon [27]. Also, it tends to occur more after direct exposure to trauma than after an indirect exposure [33]. Shalev and colleagues in a study in Israel found a higher prevalence rate of 26.95%, as against 21.35% in regions with direct and indirect exposures to conflict respectively [25]. A study in Nigeria by Beiser and colleagues found PTSD prevalence rates to be 60% in a community with direct exposure and 14.5% in a community with no direct exposure [5].

In the last three decades, Nigeria has increasingly experienced different conflicts including inter-ethnic conflicts. One of such is the Tiv-Fulani farmer-herdsmen crisis which took place between 2013 and 2014 in Benue State; affecting some of the local governments in the state including the Guma Local Government Area [11]. Some people lost their lives in the crisis while others were maimed with the destruction of properties. Unfortunately, little is known about the PTSD as a mental health consequence of the crisis in these communities.

A study was carried out by Maigari and colleagues in Plateau State, which lies in the same region of the country, where similar activities of armed conflict has been prevalent [15]. Using the Mini international neuropsychiatric interview, they found that 55.5% of the respondents in the conflict exposed group had a diagnosis of PTSD while only 9.8% was reported among those in a zone not exposed to armed conflict. Variables such as exposure to mass violence, being a female, being never married and having low monthly income were predictive of PTSD. They however failed to investigate the pattern and distribution of PTSD symptoms in their study.

It is with this background that this study was designed with the following objectives. Firstly, to compare the point prevalence of PTSD in two communities with different exposures to conflict, one directly (Uikpiam) and the other indirectly (Daudu) in Guma local government area. Secondly, to describe the pattern and distribution of symptoms and thirdly, to identify the socio-demographic variables, if any, associated with PTSD in the study participants.

2. Materials and methods

2.1. Study location and population

The study took place in Uikpiam and Daudu, two communities with similar socioeconomic activities and culture, in Guma Local Government Area (LGA) of Benue state, in North Central Nigeria. Guma is located in the North-Eastern part of Benue State with an area of 2882 km square and a population of 194,164 as of the 2006 census [20].The Local Government is bound by Makurdi, Tarka, and Logo LGAs. The majority of the inhabitants are farmers with fishing as the second-largest economic activity in the Local Government. About 95% of the population is Tiv, and the Tiv language is understood and spoken by most people in Guma [22]. Guma LGA is made up of 10 council wards, with its headquarters in Gbajimba, some of which were affected by the 2013-2014Tiv-Fulani crises.

A crisis occurred in 2013/2014 between Fulani herdsmen and Tiv farmers in the Uikpiam community in Mbabai council ward as a result of a misunderstanding between them which led to attacks and counter-attacks from both sides. During this dispute, houses were burnt and destroyed, many persons were injured and some others killed. Inhabitants of the Daudu community in the Mbawa council ward, 8 km away from Uikpiam, indirectly experienced the impact of the crises: for example, a camp was temporarily set up to house displaced persons due to the crisis. Also, there was a heavy presence of security personnel to guard the camp to prevent an escalation of the crisis to this place. Moreover, the inhabitants of Daudu were regaled with tales of trauma experiences of individuals including those of loved ones.

2.2. Selection criteria

Residents of Uikpiam and Daudu aged between 18 and 65 years and people who were physically present in the village at the time of crisis were the inclusion criteria. Eligible potential participants who had pre-existing psychopathology or had conspicuous severe cognitive impairment that made the interview practically impossible for them were excluded. The presence of pre-existing psychopathology was ruled out using a yes or no answer to a question that simply asked if the person had ever had any history of mental illness in the past (before the interview was conducted) or present (ongoing). The research assistants provided additional explanation and guidance for that screening question such as asking for an ongoing or previous behavioral, and emotional problems, apart from PTSD, that caused them distress or interfered with functioning.

2.3. Sample size determination

The study was carried out among a representative sample of the two selected communities. The available population sizes for the communities of the study were only in the gazette for 1991[20], which were: Uikpiam, 743 persons and Daudu1531 persons. However, at a projected growth rate of 3%, the population extrapolation estimate for Uikpiam and Daudu are 1722 and 3548 respectively [8].

Furthermore, using the Vaughan formula[30] to obtain the minimum sample size where Z is set at 5% significant level = 1.96 and p is 41% which is the estimate of the prevalence of PSTD among post-conflict communities in Jos, Nigeria from a previous study [21]; a sample size of 372 was calculated. After adjusting for a non-response of 10%, a minimum sample size of 413 was arrived at. using proportions to calculate, with a total projected population for Uikpiam and Daudu, the separate sample sizes were determined to be 135 and 278 respectively.

2.4. Sampling technique

The study was a cross-sectional one, that used a multi-stage cluster random sampling method. The multiple stages included the Local Government level, followed by the council ward, then enumeration areas (EA), and lastly the level of the houses.

At the level of local government, out of the six local government areas affected by the Fulani/Tiv crisis of 2013/2014, Guma was chosen by a simple random method of balloting. Guma is however divided into 10 council wards.

At the level of the council wards, there was a stratification of the wards into those that had been directly affected by conflict and those not directly affected by conflict. Through a simple random method, one community each was selected from those that were directly affected (Uikpiam) and those not directly affected (Daudu). Each community is however divided into EAs by the National Population Commission.

At the level of EAs, Uikpiam is divided into seven, while Daudu is divided into twenty EAs. By the simple random method, six out of the seven EAs in Uikpiam, and six out of the twenty in Daudu were selected. The sample population needed in each community was distributed among the six EAs in each community.

In Uikpiam, the 135 persons were divided by the 6 EAs to obtain 22 persons in 3 EAs and 23 in the remaining 3 EAs; while in Daudu, the 278 persons were distributed among the 6 EAs to get 46 persons per EA except for the 6th EA in which 48 persons were selected.

The maps of the EAs used were updated with the help of some youths in the community before the interview. With the help of the maps, the numbers of houses in each EA were available.

At the level of the houses, the numbers of houses were divided by the number of persons required in each EA to get the house interval. In each house, all the persons that met the eligibility criteria were interviewed with the questionnaires.

2.5. Study instruments

The study tool had two segments:

1. Questions on socio-demographic variables: age, gender, marital status, educational level, employment status.

2. The PTSD module of the Composite International Diagnostic Interview (CIDI) [32]. An extract from the PTSD module of CIDI was used for this study. The CIDI is a fully structured interview that makes diagnoses according to ICD 10 and DSM IV. The inter-rater reliability (k > 0.9) has been demonstrated to be excellent, while the test-retest reliability (k > 0.7) and the validity (k = 0.66) are good [3]. It has been used to study PTSD in Nigeria by Gureje et al. and Beiser and colleagues [5,13].

2.6. Ethical consideration

Approval to conduct the study was obtained from the Ethics Committee of the Benue State University Teaching Hospital. Consent was obtained from the Local Government Headquarters office in Gbajimba.

Informed consent was obtained from the participants. Participation was entirely voluntary and no harm came to any of the participants because of the study. Those found to have PTSD were referred to a mental health facility for treatment.

2.7. Study procedure

All the instruments used were translated into the Tiv language. A back-to-back iteration translation was done by different professionals such as clinical psychologists and psychiatric nurses who have both good knowledge of the subject matter and as well literate in the Tiv and English languages, to ensure the instruments remain unaltered. After translation, it was then pre-tested on 10 participants selected from one of the EAs not to be used in the study in Daudu.

The interview was conducted with the help of four trained mental health professionals who spoke both the Tiv and English language fluently. They were adequately trained in the use of the instruments by one of the authors (AMT). The main study took place between September and October 2018.

A pilot study was carried out a week before the main study; 10% of the participants not used in the main study were used for the pilot study [9]. Observations made during the study were useful in the modification of the study procedure. For example; those that filled the questionnaire on their own had to be monitored closely so they did not go away with the questionnaires; the portion of the consent form that stated that those with PTSD would be referred to the hospital had to be expunged as it seemed to serve as an inducement for the participants to answer to the symptoms of PTSD in the affirmative. During the pilot study, it was found that administration time was shorter and less cumbersome for those that had all their questionnaires administered by an interviewer (between 25–40 min) as compared to those who filled some questionnaires on their own (between 40–60 min).

2.8. Data analysis

The data collected was cleaned and analyzed using the statistical package for social sciences IBM version 23. The prevalence rates of PTSD in Uikpiam and Daudu were calculated in percentages. The comparison of the prevalence rates between the two communities was done using a Chi-Square (χ^2) test. The socio-demographic profile of the participants was presented in a frequency table and the association between PTSD and socio-demographics was analyzed using the Chi-Square test and Fisher's Exact test where necessary. The level of significance was set at below 0.05.

3. Results

3.1. Socio-demographic profile of participants

Table 1 shows the distribution of the participants by socio-demographic profile. A total of 413 participants were interviewed comprising 135 subjects from Uikpiam and 278 subjects from Daudu. The mean age of all participants was 33.5 years and the standard deviation of 12.1.

3.2. Prevalence and comparison of PTSD in Uikpiam and Daudu

Table 2 below illustrates the prevalence of and comparison of PTSD in Uikpiam and Daudu. The prevalence of PTSD was 16.3% in Uikpiam, the community that had direct exposure of conflict and 4.3% in Daudu, the community that had indirect exposure to the same conflict. In all, the prevalence rate in the total participants was 8.2%. A comparison of the prevalence rates of PTSD in Uikpiam and Daudu showed a statistical significance ($\chi^2 = 17.3$, p =<.001)

Table 1
Socio-demographic characteristics of participants.

Variables	Community of Residence		Total Participants
	Uikpiam ($N = 135$) Frequency (%)	Daudu ($N = 278$) Frequency (%)	($N = 413$) Frequency (%)
Sex			
Male	59 (43.7%)	166 (59.7%)	225 (54.5%)
Female	76 (56.9%)	112 (40.3%)	188 (45.5%)
Age			
18–29 years	54 (40.0%)	113 (40.6%)	167 (40.4%)
30–41 years	47 (34.8%)	104 (37.4%)	151 (36.6%)
42–53 years	15 (11.1%)	42 (15.1%)	57 (13.8%)
54–65 years	19 (14.1%)	19 (6.8%)	38 (9.2%)
Mean age (SD)	34.67 (13.20)	32.95 (11.61)	33.51 (12.16)
Marital status			
Single	26 (19.3%)	57 (20.5%)	83 (20.1%)
Married	95 (70.4%)	207 (74.5%)	302 (73.1%)
Separated	3 (2.2%)	5 (1.8%)	8 (1.9%)
Divorced	3 (2.2%)	6 (2.2%)	9 (2.2%)
Widowed	8 (5.9%)	3 (1.1%)	11 (2.7%)
Education			
None	49 (36.3%)	82 (29.5%)	131 (31.7%)
Primary	48 (35.6%)	79 (28.4%)	127 (30.8%)
Secondary	31 (23.0%)	101 (36.3%)	132 (32.0%)
Tertiary	7 (5.2%)	16 (5.8%)	23 (5.6%)
Employment status			
Unemployed	4 (3.0%)	24 (8.6%)	28 (6.8%)
Civil servants	2 (1.5%)	5 (1.8%)	7 (1.7%)
Student	10 (7.4%)	26 (9.4%)	36 (8.7%)
Farmer	113 (83.7%)	199 (71.6%)	312 (75.5%)
Retired	5 (3.7%)	7 (2.5%)	12 (2.9%)
Business	1 (0.7%)	17 (6.1%)	18 (4.4%)

About half (54.5%) of all participants were males with the majority of them (73.1%) married. Those with no formal education were 31.7% while altogether 68.4% had some form of education including primary, secondary, and tertiary education. Over three quarters had some form of employment, with 75.5% as farmers and 1.7% employed as civil servants.

3.3. Distribution of PTSD symptoms in Uikpiam and Daudu

Table 3 gives a summary of the distribution of the symptom clusters of post-traumatic stress disorder. Participants in Uikpiam had more PTSD symptoms than those in Daudu.

3.4. Association between socio-demographic characteristics of Total participants and PTSD

Table 4 below shows the association between the socio-demographic characteristics of the total participants and PTSD. Having PTSD was associated only with the lower educational status of the participants ($\chi^2 = 8.4$, $p = 0.0$). The likelihood of having PTSD decreased as the level of education increased.

4. Discussion

Posttraumatic Stress Disorder (PTSD) is a disorder that can occur or persist years after exposure to the trauma [23]. This has been demonstrated in

Table 2
Prevalence and comparison of PTSD in Uikpiam and Daudu.

PTSD	Uikpiam ($N = 135$) Frequency (%)	Daudu (N = 278) Frequency (%)	Total ($N = 413$) Frequency (%)	χ^2	P-value	df
No	113(83.7)	266(95.7)	379(91.8)	17.3	<0.001	1
Yes	22(16.3)	12(4.3)	34(8.2)			

Table 3

Distribution of PTSD Symptoms in Uikpiam and Daudu.

Symptom Clusters of PTSD	Uikpiam (N = 135) Frequency (%)	Daudu (N = 278) Frequency (%)	Total (N = 413) Frequency (%)
Avoidance			
No	107 (79.3)	265 (95.3)	372 (90.1)
Yes	28 (20.7)	13 (4.7)	41 (9.9)
Re-experiencing			
No	10 (7.4)	36 (12.9)	46 (11.1)
Yes	125 (92.6)	242 (87.1)	367 (88.9)
Arousal			
No	86 (63.7)	237 (85.3)	323 (78.2)
Yes	49 (36.3)	41 (14.7)	90 (21.8)

the study which was conducted some years after the crisis in two communities (Uikpiam and Daudu) in Benue, a North Central Nigerian state. The prevalence rate for PTSD found in this study seats between what has been found in Nigeria which ranged from as low as less than 1% [13] to as high as 60% [5]. This variability can be attributed to several factors including variation in the sample population, sample size, point of assessment, the use of screening or diagnostic instruments, and traumatic stressors [19].

The statistically significant difference between the rates of PTSD in the two communities based on proximity to exposure to conflict is in keeping with findings in Nigeria, where a higher rate of 60% was reported by Beiser et al. in Ken-Khana, with direct exposure and 14.5% in Nyo-Khana, a community with no direct exposure [5] in Rivers State, South Southern Nigeria. This difference was also found by Maigari et al. in another indigenous study, with a prevalence of 55.9% for those exposed to conflict and 9.8%

Table 4

Association between socio-demographic characteristics of total participants and PTSD.

	PTSD		
	No (N = 379) Frequency (%)	Yes (N = 34) Frequency (%)	Test
Sex			
Male	211 (93.8)	14 (6.2)	$\chi^2 = 2.6$
Female	168 (89.4)	20 (10.6)	$p = 0.1$
Total	379 (91.8)	34 (8.2)	df = 1
Education[#]			
None	114 (87.0)	17 (13.0)	$\chi^2 = 8.4$
Primary	116 (91.3)	11 (8.7)	p = 0.0
Secondary	126 (95.5)	6 (4.5)	df = 3
Tertiary	23 (100.0)	-	
Total	379 (91.8)	34 (8.2)	
Age			
18–29	155 (92.8)	12 (7.2)	Fisher Exact
30–41	136 (90.1)	15 (9.9)	Test = 0.9
42–53	53 (93.0)	4 (7.0)	
54–65	35 (92.1)	4 (7.9)	
Total	379 (91.8)	34 (8.2)	
Marital Status[#]			
Single	77 (92.8)	6 (7.2)	$\chi^2 = 4.2$
Married	279 (92.4)	23 (7.6)	$p = 0.4$
Separated	7 (87.5)	1 (12.5)	df = 4
Divorced	7 (77.8)	2 (22.2)	
Widowed	9 (81.8)	2 (18.2)	
Employment Status[#]			
Unemployed	25 (89.3)	3 (10.7)	$\chi^2 = 6.5$
Employed	7 (100.0)	–	$p = 0.3$
Student	36 (100.0)	–	df = 5
Farmer	282 (90.4)	30 (9.6)	
Retired	11 (91.7)	1 (8.3)	
Business	18 (100.0)	–	

[#] Yate correction.

for those not exposed to conflict [15]. Elsewhere, outside of Nigeria, the report is the same; for example, Shalev and colleagues in a study in Israel found a higher rate of 26.95% in the community directly exposed and 21.35% in the community with no exposure [25]. These findings suggest that being a victim or direct witness of trauma makes worse the outcome of PTSD more than learning about trauma from another person.

The rates obtained in this study is lower when compared to other indigenous studies by Sheikh (42.2%), Obilom (41%), Akinyemi (34%), Beiser (60%), and Maigari (55.9%) [2,5,15,21,26]. But then, a much lower rate of less than 1% has been reported by Gureje in a study involving six South Western and two North Central Nigerian states [13]. The difference between the PTSD rate in the present study and that of Gureje et al. is that their study was not carried out in post-conflict communities.

The lower rate obtained in this study as against some other indigenous post-conflict studies [2,5,21] may be partly due to the wide interval between the times of conflict and survey. Some studies have shown a general decline in the prevalence of PTSD over time. Galea in a longitudinal study after the World Trade Centre attack in the USA found a decline from 7.5% to 0.6% at 1 month and 6 months respectively post the attack [12]. A decline from 27.3% at 6-8 weeks to 17.7% at 13–14 weeks was also recorded in a follow-up study by North et al. after the mass shooting in Killeen Texas [34] (North et al., 2002). This study took place about 4 years after conflict while that by Obilom took place, 7–9 months after conflict [21]. Furthermore, the assessment of direct exposure in this study was at the community level while that by Obilom was at an individual level, in persons who were either victims or witnesses of the riot.

Another explanation that may account for the higher rates recorded by Beiser et al., and Maigari and colleagues could lie in the magnitude or severity of trauma which includes high mortality rate and severity of property destroyed during conflict [5,15]. The study by Maigari reported that over 500 persons were killed while Beiser reported that the study location had been subject to severe violence before the study with a continued low level of conflict at the time of research [5,15]. It could be that the severity of trauma was more in these areas than what had occurred in Uikpiam, where probably not as many people lost their lives and a few houses were burnt.

The study participants' circumstances could also be a reason for the higher findings in the other studies. For instance, Sheikh's study was among the internally displaced persons (IDP) who had fled their homes due to conflict and were set up in camps by the government [26], while the study by Akinyemi was on refugees who had lived in the camp for over10 years [2]. IDPs are people who are forced to flee from their usual residence because of armed conflict or violence, human or man-made disasters but have not left their countries while refugees are persons who as a result of persecution or conflict flee their country to another [29]. IDPs are a vulnerable group that remains at high risk of physical, sexual attacks and even at the risk of abduction [29]. They usually lack adequate shelter, food, and health services and may be caught in the crossfire [29]. Refugees suffer similar experience, if not worse than IDP persons because, in addition to the range of problems from persecution or conflict that make them flee their countries, they may face uncertainties during migration and challenges in the process of resettlement in the new country [7].These factors in both groups make them more vulnerable and may have contributed to the higher prevalence found in the two studies when compared to ours.

Even though only 8.2% of the total participants had full PTSD, up to 88.8% had symptoms of re-experiencing, 9.9% for avoidance, and 21.8% for arousal criteria, showing the presence of subthreshold PTSD [16].This finding is similar to what was found by Obilom and Thacher in Jos, North Central Nigeria with the majority, over two-thirds of participants (89.7%) meeting the criteria for re-experiencing symptoms [21]. This may have implications for the level of intervention needed, as some persons with subthreshold PTSD may have disabilities similar to those of persons with full PTSD.

PTSD was significantly associated with a lower educational status of participants in this study. This is similar to what was obtained by Taru et al. among internally displaced youth exposed to Boko Haram in

North-Eastern Nigeria [28]. However, in another study by Rafiey et al., there was no association found between PTSD and educational status [24]. Lower intelligence or educational attainment has been previously described as a vulnerability factor for PTSD [1]; perhaps, higher educational status enhances people's skills and coping mechanisms [14]. Finally, it must also be noted that PTSD on the other hand, can impact negatively on academic performance and lower educational attainment [35] (Perez et al., 2020). The association found between the two variables in this study however should not be interpreted as causative as there may be other factors in the individuals that may make them vulnerable to lower educational attainment and PTSD.

4.1. Limitations and strengths of study

There are some limitations with the study, for example, the study focused only on PTSD, but the post-conflict mental health sequela goes beyond PTSD. The exclusion of the presence of a pre-existing psychopathology was highly subjective. No scale was applied to rule out the presence of pre-existing psychopathology that gave some details of symptoms that constitute mental disorders. It is also likely that the inconsistent means of questionnaire administration, where some participants filled the questionnaire by themselves and others were interviewed, could have introduced bias into the response; it would have been better to consistently apply an interviewer administration for all the participants. Finally, the report did not control for other traumatic life events and stressors that could precipitate PTSD, although the symptoms on re-experiencing, avoidance and hyper arousal were narrowed down to the 2013/14 crisis. Notwithstanding these limitations, the study had some strengths, notably: a relatively large study sample as well as the use of a standardized diagnostic instrument to assess for PTSD.

5. Conclusion

This study found a disturbingly high presence of PTSD in the two communities of study, Uikpiam and Daudu, Benue state, in the North-Central part of Nigeria, some years after conflicts, suggesting that PTSD as a disorder may be prolonged and exist years after the trauma. Also, the prevalence of PTSD was more in the community with a direct exposure compared to the other which had an indirect exposure, suggesting that at individual and community levels, a direct exposure increases vulnerability to PTSD. There was a high sub-threshold manifestation of PTSD identified and lower education attainment was a risk factor for PTSD. Governments and Non-governmental organizations should make efforts to alleviate and address the mental health consequences of conflict that occurred in the region as they do for the physical health needs of the people. An early intervention program may prevent long-term consequences like this.

Declaration of Competing Interest

On behalf of the authors of the above-titled manuscript, I declare that the article is original and has not been published in any journal. I certify that we have each made substantial contribution so as to qualify for authorship. We have no financial support for the study and we also declare no conflict of interest.

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