

## Screening of Bipolar Disorders and Characteristics of Symptoms in Various Populations in Surabaya, Indonesia

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Although Bipolar Disorder (BD) is a common mental illness worldwide (1-3%), there was no data about the prevalence of BD or bipolar spectrum disorder in Indonesia. This study aimed to screen bipolar disorders in various communities Surabaya and its variations of symptoms characteristics. Through a cross-sectional design and non-random sampling survey ( $N = 1,104$ ) was conducted using the Mood Disorder Questionnaire (MDQ), a screening tool for BDs, and validated self-report instrument. The SPSS 17.0 and chi square was used for analysis. Results showed the lifetime proportion of MDQ positive was 10.7% ( $n = 118$ ). The proportions of MDQ positive by gender were 4.8% males and 5.9% females, no gender ( $p = .444$ ) and educational background differences ( $p = .470$ ). The highest proportions of MDQ positive were 4.4% in the 25-60 year group, 4% having an education level of senior high school and 6.7% having unmarried status. Among participants who had MDQ positive, 22% had an awareness of having psychological problems, unfortunately only 5.9% had visited a medical professional. Overall, the lifetime proportion of suspected bipolar disorder spectrum in Surabaya was higher than that reported in other studies. Conducting a periodic research regarding other psychosocial-cultural backgrounds will help clinicians and government identify the exact prevalence of bipolar disorder in the society and their risk factors. Furthermore, it will help to prevent the increased rate of bipolar disorders.

*Keywords:* bipolar disorder, various groups, prevalence, symptom characteristics, Surabaya-Indonesia

Sekalipun prevalensi Gangguan Bipolar (GB) di dunia cukup tinggi (1-3%), namun belum ada data yang akurat untuk Indonesia. Tujuan studi ini adalah menyaring GB dan sifat variasi gejala pada enam kelompok masyarakat: remaja, dewasa, lansia, tahanan, pekerja seks, dan *intravenous drug users* (IVDU). Melalui desain belah silang dan sampling tak-acak dilakukan survey ( $N = 1.104$ ) menggunakan Mood Disorder Questionnaire (MDQ), alat penyaring untuk BD dan self-report questionnaire. Analisis menggunakan SPSS 17.0 dan uji *chi square*. Hasil menunjukkan prevalensi seumur hidup MDQ positif dari seluruh partisipan sebesar 10,7% ( $n = 118$ ). Proporsi MDQ positif menurut gender 4,8% pria dan 5,9% perempuan. Tidak terdapat perbedaan gender ( $p = ,444$ ) dan latar belakang pendidikan ( $p = ,470$ ). Proporsi tertinggi MDQ positif pada kelompok umur 25-60 tahun sebesar 4,4%, tertinggi pada pendidikan sekolah lanjutan tingkat atas (4%) dan pada individu tidak menikah sebesar 6,7%. Dari yang mengalami MDQ positif terdapat 22% menyadari keluhan psikisnya, tetapi hanya 5,9% yang berobat ke dokter. Simpulan sementara survei ini menunjukkan proporsi terduga BD di Surabaya lebih tinggi daripada yang dilaporkan di studi-studi lain. Dengan melakukan studi secara periodik menyangkut latar belakang psikososial dan cultural di masyarakat akan membantu para klinisi dan pemerintah mengidentifikasi prevalensi yang tepat GB di masyarakat dan faktor risikonya. Selanjutnya juga membantu mencegah peningkatan GB tersebut.

*Kata kunci:* gangguan bipolar, variasi kelompok, prevalensi, ciri gejala, Surabaya-Indonesia

Bipolar disorder (BD), also known as a manic-depressive illness, is a brain disorder that causes unusual shifts in mood, energy, activity, and the ability to carry out day-to-day tasks (NIMH, 2008). A BD relapse occurs in 80% of patients; as they grow older, the episodes recur more frequently and last longer. BDs are associated with significant mortality; 20% of patients commit suicide (American Psychiatric Association, 1994, 2013). BDs occur in approximately 1 to 2.4 percent of the population and often start in early adulthood (Merikangas et al., 2007; B. J. Saddock & Saddock, 2007). BDs affect approximately 5.7 million of American adults, or about 2.6 percent of the U.S. population aged 18 and older in a given year (Kessler, Chiu, Demler, & Walters, 2005b). The median age of onset for BDs are 25 years (Kessler, Berglund, Demler, Jin, & Walters, 2005a). The lifetime (and 12-month) prevalence of BDs include 1.0% (0.6%) for Bipolar disorders type I (BDs-I) and 1.1% (0.8%) for Bipolar disorders type II (BDs-II) (Merikangas et al.). In Canada, a survey based on the Composite International Diagnostic Interview (CIDI) in 2012 found that the estimated lifetime prevalences of BD I and II were 0.87% (95% CI 0.67% to 1.07%) and 0.57% (95% CI 0.44% to 0.71%), respectively. Prevalences did not differ by sex. The estimated prevalence of self-reported BD was 0.87% (95% CI 0.65% to 1.07%) (McDonald et al., 2015).

Up to 2014 there has been no data on the prevalence of BDs in the Indonesian population. The national data from Ministry of Health, Republic of Indonesia (2007) indicated that the average point prevalence of emotional disorders (depression and anxiety disorders) was 11.6% in the 33 provinces of Indonesia. Based on this data, the higher the age, the more prevalent the emotional disorders were. It occurred from the age group of 15-24 years old (8.7%) to 75 years old and above (33.7%), women (14%) and men (9%). The prevalent rates of uneducated people (21.7%) outnumbered the educated ones (6.7%). Unemployed and housewife population had the highest prevalence, 19.6% and 13.4% subsequently (Ministry of Health, Republic of Indonesia).

Surabaya, the second biggest city of Indonesia and the capital city of East Java Province, had a 14.7% prevalence of emotional disorders, which was higher than the national prevalence 11.6% (Ministry of Health Republic of Indonesia, 2007). A survey in 2013 also showed the same result, Surabaya has a higher prevalence of emotional disorders (10.8%) compared to the mean prevalence of East Java pro-

vince (5.7%) and mean national prevalence (6.0%) (Ministry of Health Republic of Indonesia, 2013). Even there was national data for mental emotional disturbance, Ministry of Health failed to identify specific mental disorders in population.

Another issue is misdiagnosis or under-diagnosed BDs. There are some reasons why BDs were under-diagnosed, this include stigma, lack of insight from communities: lack of subjective suffering, perceived as variation of personality, not a disorder. They enjoy their 'high' so prefer not to seek help or treatment; lack of insight of the clinicians mild cases which resemble other mental disorders; bipolar disorders does not always present in a consistent pattern, lack of systematic assessment of mania; the symptoms of 'high' also occur in people who do not have BDs (Cassano et al., 1999; Smith & Ghaemi, 2010). For these reasons, it is important to screen for BDs either in population or in the clinics. The aim of the present study is to screen BDs in various populations in Surabaya.

## Method

### Participants

Participants consisted of six groups, including adolescents and young adults (12-24 years old), adults (25-60 years old), the elderly (> 60 years old), prisoners, sex workers and intravenous drug users (IVDUs) totalling 1,104 people. The design of the study was cross sectional and the sampling technique used was non-random sampling.

### Procedures

The adolescent and young adult group comprised medical students at the Faculty of Medicine, Universitas Airlangga, Surabaya, including their relatives and friends from other faculties. The adult group consisted of the students' parents or relatives or any adults who lived in Surabaya. The elderly group consisted of some non-governmental organizations senior citizens. The prisoner group included some prisoners at Medaeng prison, Surabaya. The sex workers group consisted of a number of sex workers from the ex-Dolly red light district in Surabaya. The intravenous drug users (IDUs) group was the residents of the Methadone Clinic of Dr. Soetomo General Hospital, Surabaya. A self-rated questionnaire was distributed to the subjects by the authors after

introducing the study and obtaining their informed consent.

### Instruments

The survey included the Mood Disorder Questionnaire (MDQ), a screening tool for BDs and a validated self-report instrument that screen the presence of a lifetime history of bipolar disorder. The questionnaire consists of 13 yes/no items derived from both the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria and clinical experiences. Additional yes-no questions were asked to determine whether the symptoms co-occurred at the same period of time or not, and to understand the degree of functional impairment caused by the symptoms (a four-point scale ranging from no problem to serious problem). An individual would be considered to have MDQ positive if they answered yes on seven or more out of the 13 items and yes to the co-occurrence items, as well as if a moderate or serious degree of functional impairment was reported. Participants who had MDQ positive were considered BDs. The MDQ has been validated in general adult population (sensitivity: 0.28 and specificity: 0.97) against a diagnosis of bipolar type I and II based on Structured Clinical Interview for DSM-IV (Hirschfeld et al., 2003). It has been translated into Indonesian and was back translated and tested to a small sample (less than 30). All the items were valid with  $p = .000$  ( $SD = 0.395 - 0.500$ ) and the reliability range from .785 to .805 (Maramis, 2011).

### Statistical Analysis

The distribution of frequencies were calculated using SPSS 17.0 to describe demographic data, the proportion of suspected MDQ positive in total population and in each group of sample. Statistical analyzing to compare characteristics of symptoms represented by MDQ items between gender in the MDQ positive and in the total population using chi square tests.

## Results

### Demographics

A total of 1,104 respondents were classified into six groups, consisted of 439 (39.8%) males and 665 (60.2%) females. The male-to-female ratio was 1:1.5 and the mean age at the enrollment of study was

32.69 years (31.82-33.56, CI 95%;  $SD = 14.72$ ). There were no differences between gender ( $p = .340$ ) and between educational backgrounds ( $p = .849$ ). If the high risk group (i.e. prisoners, sex workers and IVDUs) was excluded ( $n = 631$ ), the mean age was 32.67 years (31.30-34.03, CI 95%,  $SD = 17.41$ ). There were no gender ( $p = .461$ ) and educational background differences ( $p = .522$ ). The sociodemographic characteristics of the cases were summarized in Table 1.

### Screening of Bipolar Disorders

Based on the total number of participants ( $n = 1,104$ ), the lifetime proportion of participants with MDQ positive, which means that participants who were screened positive are considered for BDs, was 10.7% ( $n = 118$ ) and if the high risk population ( $n = 631$ ) was excluded, the lifetime proportion of MDQ positive participants was 10.8% ( $n = 68$ ). Male to female ratio in the MDQ-positive group was 5:6. No gender differences ( $p = .444$ ) and no educational background differences ( $p = .470$ ) were found. The largest proportions in the MDQ-positive group were 4.4% in the 25-60 year group, 4% having an education level of senior high school and 6.7% having unmarried status (Table 1).

Out of those who had MDQ positive, 22% had an awareness of having psychological problems, and 6.2% had family members with bipolar disorders or other mental disorders, but only 5.9% had visited medical professionals or psychiatrists.

The proportions of MDQ positive participants within each group were 13.1% in adolescence group, 10.3% in adult group, and 1.3% in the elderly group and among the high-risk groups, 15.0% in prisoner group, 6.0% in sex worker group and 15.6% in IVDU group. Among the high-risk groups, the IVDUs had the highest proportion of MDQ positive participants. Prisoners and IVDUs had more or less the same proportion for having BDs (Table 1).

### Symptoms of Bipolar Disorders

Table 2 shows correlation analysis between Symptoms of suspected BD as represented by MDQ items and gender in the MDQ positive sample and total population. It shows that in the MDQ positive group, gender differences were found in the following symptoms: increased interest in sex ( $p = .003$ ) and less sleep ( $p = .010$ ); both were higher in males than females, and talkative ( $p = .019$ ) which was higher in female than males.

Table 1  
*Characteristics of Total Samples and Proportions of MDQ Positive Participants*

Demographics	Total sample <i>n</i> = 1,104 (%)	MDQ positive (10.7%; <i>n</i> = 118)	
		Proportion in total population <i>n</i> = 1,104 (%)	Proportion within each group (%)
Group of age			
Adolescence	358 (32.4)	47 (4.3)	47 (13.1)
Adult	195 (17.7)	20 (1.8)	20 (10.3)
Elderly	78 (7.1)	1 (0.1)	1 (1.3)
High-risk groups			
Prisoners	206 (18.7)	31 (2.8)	31 (15.0)
Sex Workers	235 (21.3)	14 (1.3)	14 (6.0)
Intravevous Drug Users	32 (2.9)	5 (0.5)	5 (15.6)
Sex			
Male	439 (39.8)	53 (4.8)	53 (12.1)
Female	665 (60.2)	65 (5.9)	65 (9.8)
Age			
12-16 years	82 (7.4)	22 (2)	22 (26.8)
19-24 years	376 (34.1)	46 (4.2)	46 (12.2)
25-60 years	561 (50.8)	48 (4.4)	48 (8.6)
- >60 years	85 (7.7)	2 (0.2)	2 (2.4)
Education (Graduated)			
No education	72 (6.5)	4 (0.4)	4 (5.6)
Elementary	164 (14.9)	14 (1.3)	14 (8.5)
Junior high school	142 (12.9)	14 (1.3)	14 (9.9)
Senior high school	360 (32.6)	44 (4)	44 (12.2)
Undergraduate	347 (31.4)	41 (3.7)	41 (11.8)
Postgraduate	19 (1.7)	1 (0.1)	1 (5.3)
Marital status			
Not married	516 (46.7)	74 (6.7)	74 (14.3)
Married	365 (33.1)	27 (2.5)	27 (7.4)
Divorce	173 (15.7)	14 (1.3)	14 (8.1)
Spouse death	50 (4.5)	3 (0.3)	3 (6.0)

Table 2  
*Correlations Between MDQ Items and Gender in the MDQ Positive Sample and Total Population*

MDQ items	MDQ positive ( <i>n</i> = 118)			Total respondent ( <i>n</i> = 1,104)		
	Male	Female	<i>p</i>	Male	Female	<i>p</i>
	53 (44.9%)	65 (55.1%)		439 (39.8%)	665 (60.2%)	
Hypertimic	46 (46.5%)	53 (53.5%)	.440	261 (40.4%)	385 (59.6%)	.607
Irritability	32 (39.0%)	50 (61.0%)	.052	160 (33.9%)	312 (66.1%)	.001*
Increased self-confidence	42 (45.7%)	50 (54.3%)	.762	247 (38.8%)	389 (61.2%)	.463
Less sleep	33 (56.9%)	25 (43.1%)	.010*	155 (43.5%)	201 (56.5%)	.077
Talkative	33 (38.4%)	53 (61.6%)	.019*	158 (36.5%)	275 (63.5%)	.074
Racing thoughts	34 (50.0%)	34 (50.0%)	.195	139 (48.6%)	147 (51.4%)	.000*
Poor concentration	39 (45.3%)	47 (54.7%)	.877	203 (39.1%)	316 (60.9%)	.677
Raised energy level	44 (44.9%)	54 (55.1%)	.993	230 (39.5%)	353 (60.5%)	.822
Hyperactivity	47 (47.0%)	53 (53.0%)	.283	252 (38.7%)	400 (61.3%)	.364
Increased social activity	39 (47.0%)	44 (53.0%)	.486	200 (38.0%)	326 (62.0%)	.259
Increased interest in sex	27 (62.8%)	16 (37.2%)	.003*	122 (57.3%)	91 (42.7%)	.000*
Risk taking behavior	34 (42.5%)	46 (57.5%)	.444	140 (40.1%)	209 (59.9%)	.872
Spending money	37 (45.7%)	44 (54.3%)	.805	160 (38.9%)	251 (61.1%)	.662

Note. \**p* = .05

Surabaya is a culturally, religiously and politically unique city. Urban living has increased in Surabaya over the last few decades. Surabaya has become a metropolis with more than three million residents plus an additional million commuting workers during daytime. It has to face many serious problems, such as overpopulation and high-rate unemployment. These factors are related to the stresses of urban life and predisposition to mental disorders, especially mood disorders (Peen, Schoevers, Beekman, & Dekker, 2010; Wallace, Weeks, Wang, Lee, & Kazis, 2006). This study is the first of its kind conducted in Surabaya to determine the proportion of bipolar disorder that occurs in some local communities.

This study shows that the proportion of suspected BDs which is represented by the percentage of MDQ positive participants in Surabaya is higher (10.7%) than in the rest of the world, namely between 0.3 to 3% (Hilty, Brady, Hales, 1999; Kessler, Rubinow, Holmes, Abelson, Zhao, 1997; Kupfer et al., 2002; Robins, Locke, & Regier, 1991; Szadoczky, Papp, Vitrai, Rihmer, & Furedi, 1998; ten Have, Vollebergh, Bijl, & Nolen, 2002; Weissman et al., 1996; Witchen, Essau, von Zerssen, Krieg, & Jaudig, 1992). There are several possibilities that should be considered concerning these differences. The instrument used in this study was the MDQ, which was used to establish the criteria for the diagnosis of bipolar disorders according to DSM-IV or ICD-10. It is a screening instrument that is relatively sensitive to preserve its high specificity and tends to suggest that patients may have these symptoms. The indications of symptoms have no specific point of time, and therefore, the occurrence of symptoms for a short period of time could become a false positive for BDs. To know exactly whether a person suffers from bipolar disorders or not, physicians have to assess and conduct a detailed longitudinal interview, involving their families as well (Angst, 2007). Although MDQ is a screening instrument for BDs, the result in this study is more suitable to indicate the proportion of bipolar spectrum disorders (BSD) than that of BDs, nonetheless, the prevalence rate is still higher than the world prevalence of bipolar spectrum disorders. The estimated prevalence rates for bipolar spectrum disorders range from 3.0% to 8.3% (Dell'Aglio, Basso, de Lima Argimon, Arteche, 2013).

Adolescents have the highest proportion of suspected BDs compared to adult and geriatric population. Most of the studies revealed a higher prevalence of both BDs and BSD in younger individuals, but some other studies indicated the prevalence of BDs

in an older-age group (Dell'Aglio et al., 2013). This may be due to hormonal factors in adolescence and adolescents have to cope with psychosocial stressors in their early adulthood.

No consistent gender differences have been found in BDs. An equal number of men and women could be affected. This is similar to research data of bipolar disorder in the U.S. and some other countries (Weissman et al., 1996).

The clinical-feature difference between men and women was the symptom of increased interest in sex. The symptom occurred more frequently in males than females. According to other studies, there are no differences between gender in the symptoms, rates of depressive episodes, age and polarity of onset, severity of illness, response to treatment and suicidal behaviours (Diflorio & Jones, 2010). The result is probably influenced by local cultures. In Surabaya, more than 80% of the population is Javanese. In Javanese culture, males since childhood have always been encouraged to express their opinions in every aspect of their life and they are expected to do this more expressively. On the other hand, females since childhood in Javanese culture have been raised to suppress their emotions and to be more submissive. Women should be able to hold the balance in the family. The more they dedicate themselves to domestic values, the more they are controlled by their social environments, such as neighborhoods. This leads them to tight social values (Geertz, 1961; Koentjaraningrat, 1985). Females are not allowed to express themselves, they should repress their unaccepted behaviors. When it comes to disorders, the only thing they could repress their increased interest in sex, preventing this to become overt behaviour. Thus, cultural factors might contribute to the gender differences which are important in understanding the nature of mood disorders in the light of multiculturalism. Cultural differences may affect the interpretation of certain symptoms. Additionally, ethnic stereotypes may play a role in diagnostic processes. Indonesia comprises thousands of ethnic groups. Each of them has a specific characteristic, culture and dialect or language. These are the most important factors for clinicians to consider in order to be more culturally sensitive in establishing a doctor-patient relationship.

Another symptom which was found significantly higher in males than females was a lack of sleep. The American Psychiatric Association (APA, 1994; 2013) indicates that sleep deprivation is a core symptom of bipolar disorder. During manic episodes,

69-99% of people with BD experienced reduced need for sleep (Harvey, 2008; Latalova et al., 2013). Major depressive episodes predominate in women, whereas in males, manic episodes predominate or are equal to depressive episodes. Therefore, it is assumed that the predominant manic episodes in males would manifest in a lack of sleep.

Regarding the talkative symptom, the ways people interact with each other is influenced by their culture. In general, women show a relational type of interaction, thus they communicate to vent their feeling, ask for help, solve their problems and reduce their negative emotions, such as loneliness and sadness. This could be the reason why women seem more talkative than men. Meanwhile, men tend to have a competitive type of interaction, they communicate mostly to discuss issues and express their opinions. In Indonesia, it is common that women are talkative and "chatty" and men are more quiet (Mohindra & Azhar, 2012). The cultural aspect and also sleep deprivation must be investigated further to build a firm understanding.

In this study, there was a higher proportion of suspected BDs, that represent by MDQ positive among singles than married participants. This is similar to the Norway study (Schoeyen et al., 2011). This is probably because people with bipolar disorders are difficult to establish relationships with others and even more difficult to get married. On the contrary, married people are naturally capable of making choices and eventually can manage their relationship problems, and therefore are not at risk for BDs. Staying unmarried among women in Indonesia is not a common option. In Indonesia, marriage is closely associated with culture (Geertz, 1961; Koentjaraningrat, 1985). For parents, marrying off their children is their last task that will enhance their roles as parents. Therefore, when they have an unmarried daughter, they may feel ashamed. This condition will dishonor their family and the girl herself. This could explain the increased risk of bi-polar disorder among unmarried women. Social pressures as well as sustained mood labilities may add an uncomfortable feeling in unmarried women that makes them have difficulties in interacting with their environment and exacerbate their emotional symptoms.

Among the MDQ positive group, only 5.9% of participants had ever consulted their symptoms to a medical professional or psychiatrist although 22% of them were aware of the symptoms. In contrast, the studies in the United States conducted during 2001 and 2003 showed that 20.1% of the population

(aged 18 to 54) had received treatments for emotional disorders (Kessler et al., 2005c). This was probably due to the fact that the symptoms of mood disorders were still perceived as common reactions to life events and that the persons in question blamed external events rather than the abnormality of moods or predispositions caused by their brain. Some other explanations are related to a stigma for mental illness and a perception that the symptoms are only a variation of personality and not a disorder (Smith, & Ghaemi, 2010).

Among the high-risk groups, prisoners and IVDUs were found having the largest proportion of BDs in the total population and within each group, respectively. This confirms the result of the study by Pinta in 1999, indicating that the prevalence of severe mental illness among prisoners was 15-19% (Thigpen, Solomon, Keiser, & Ortiz, 2004). Substance use disorders and bipolar disorders are associated with mutually increased risks. The prevalence estimates of drug abuse and dependence varied from 10 to 48% in male prisoners and 30 to 60% in female prisoners (Fazel, Bains, & Doll, 2006), whereas the prevalence of any substance use disorders in bipolar patients were 48-61% (Cerullo, & Strakowski, 2007).

A positive MDQ result does not mean that a person will suffer from BDs. Definite diagnosis of BDs should be done by physicians or psychiatrists by interviewing and physical diagnosing. Positive results can increase a person's alertness for the possibility of having symptoms of bipolar disorder. Hopefully he/she can immediately address this by doing further clinical examination to a psychiatrist. It aims to be immediately in diagnosis stands and when treatment is needed, it can be done as early as possible.

The results in this study would be useful to raise the awareness of mental health providers to develop effective interventions for predisposition of BD since there are many cases of bipolar disorders in the community that clinicians have to deal with. It is important to increase community awareness by providing continuous education on BDs. Furthermore, increasing awareness of BDs among psychiatrists can minimize mis-diagnoses and under-diagnoses, as well as comorbidities and complications caused by BDs.

### Limitations and Suggestions

However, this study cannot represent the prevalence of Bipolar disorder in the whole population in Surabaya. The limitations are due to methodology issues, such as not using a random sampling techni-

que, taking small samples (less than 30) to test the content validity, and did not consider the variety of ethnic groups, sociodemographic, and socioeconomic backgrounds of participants, and did not confirm with psychiatric interview, as well, to know the precisely diagnosis of BDs.

Further studies should utilize a randomized sampling technique and diagnostic tools of bipolar disorders in order to know the exact prevalence of BDs. Further studies also have to seek further about the cultural influence regarding to suspect BDs. Besides, further randomized sampling studies are needed.

## Conclusion

Overall, this study indicates that the proportion of suspected predisposition of BDs in Surabaya population is higher than what has been reported in some studies. In the whole population, the highest proportions of suspected predisposition BDs were found in the adolescence and prisoner groups and the lowest proportions were found in the elderly and IVDUs groups. The results also indicate that within groups the elderly and sex worker groups had the lowest proportions of suspected BDs, while the prisoner and IVDU groups had the highest proportions of suspected BDs. It is important to provide a psycho-education to the community regularly to enable them to screen for predisposition BDs and consult early-onset BDs to psychologists, doctors or psychiatrists. This is a strategy for early detection and intervention.

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