Prevalence of Mental Disorders Suspicion among Adults with Disabilities and Socioeconomic Inequalities in West of Iran

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Abstract

Background: Mental disorders are prevalent among individuals with disabilities, often exacerbated by socioeconomic factors. This study aims to examine the prevalence of mental disorders among people with disabilities in Iran, addressing a significant yet under-researched issue within this population.

Methods: Conducted in 2023, this cross-sectional study focused on adults with physical and sensory disabilities (sight, hearing, speech) in Sanandaj city. A total of 613 individuals participated, selected through simple random sampling. Data were gathered utilizing the General Health Questionnaire-28 (GHQ-28). Multivariate logistic regression identified significant predictors of mental disorder suspicion, while the concentration index (C) and concentration curve (CC) measured prevalence inequality. Data analysis was conducted using STATA software version 16.0.

Results: The prevalence of mental disorder suspicion was 56.7% (344 individuals), with severity categorized as 29.7% mild, 16.6% moderate, and 10.4% severe. Significant predictors for increased odds of mental disorder symptoms included being female (AOR: 1.55; 95% CI: 1.05-2.29), under 30 years old (AOR: 3.46; 95% CI: 1.55-5.76), unemployed (AOR: 4.10; 95% CI: 2.74-6.14), lacking supplementary insurance (AOR: 2.78; 95% CI: 1.49-5.20), and belonging to the poorest economic class (AOR: 4.23; 95% CI: 2.34-7.62). The suspicion of mental disorders was unevenly distributed and concentrated among individuals with lower economic status (C = -0.395).

Conclusion: This study highlights significant mental health disparities among individuals with disabilities, particularly in economically disadvantaged groups. Health policies should focus on prevention and access to mental health services, such as community-based programs, healthcare provider training, and financial assistance, alongside efforts to improve employment opportunities for this population.

Keywords: Disabled individuals, Disability, Mental health, Psychiatric disorders, Socioeconomic status, Health Equity, Health inequality, Iran

Introduction

Disability and its associated limitations can ha ve a negative impact on various aspects of the lives of people with disabilities (1). These challenges can lead to psychological pressure, discrimination, social stigma, loss of job, disconnection of relationships, and social isolation (2-5). The challenges faced by people with disabilities put them at

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↑What is "already known" in this topic:
Mental disorders are prevalent among individuals with disabilities, often exacerbated by socioeconomic factors. Previous studies highlight the increased risk of anxiety and depression in this population, yet comprehensive data specific to Iran remains limited.

→What this article adds:
This study reveals that a significant percentage of individuals with disabilities are suspected of having mental disorders, particularly concentrated among economically disadvantaged groups. It highlights critical socioeconomic disparities that exacerbate mental health challenges within this population.

greater risk for mental health disorders (6). Adults with disabilities are more likely to experience depression and anxiety (7) and generally have reduced access to healthcare compared to their non-disabled counterparts (8).

Research indicates that individuals with physical disabilities are 2 to 3 times more likely to suffer from mental disorders, such as anxiety and depression, compared to those without disabilities (9-11). A national study conducted in the United States in 2018 found that approximately 33% of adults with disabilities reported mental disorders, revealing that they are five times more likely than adults without disabilities to experience mental health issues (12). Also, people with disabilities have a higher chance of social isolation, poverty, malnutrition, violence, and discrimination(9). For example, children and adults with disabilities had a 50% and 300% higher chance of experiencing violence in the last year, respectively (13).

Access of people with disabilities to mental health services is threatened and limited by financial, cultural, organizational, and communication barriers, as well as unavailability, poverty and unemployment, insufficient training of service providers, and substandard service quality (14-16).

In the past decades, mental disorders have increased in the world, and it is predicted to become one of the main causes of disease burden in the world (17). Mental disorders such as depression increase the risk of suicide and have a negative impact on people's quality of life (18). In Iran, according to the latest statistics from 2013, more than one million people have at least one disability (19).

Due to the rapid growth of the elderly in Iran, it is expected that the rising population of individuals with disabilities poses significant challenges to the country's health and welfare system. There is no comprehensive study in the country about the prevalence of mental disorders among the disabled in the country, but its prevalence is high among the general population and has been increasing in recent years (20). According to national studies in Iran in 1999 and 2015, the prevalence of people suspected of having mental disorders in the population over 15 years old increased from 21% to 23.4% (20). In another national study in the same year, which was conducted on people over 18 to 65 years old, about 30% of people were suspected of having some degree of mental health disorders (21).

According to studies conducted in Iran, having a disability increases the odds of having mental disorders (20, 22). In Iran, due to cultural problems, numerous economic and social obstacles, weakness in the implementation of the law for the protection of the disabled, and the weakness of the health and support systems, people with disabilities face many challenges that can make them susceptible to mental disorders (23-25). There is limited information regarding the mental health status of people with disabilities in Iran, yet monitoring this aspect is crucial for effectively addressing problems, designing appropriate interventions, and evaluating their impact. Therefore, this study was conducted for the first time in the city of Sanandaj, the capital of Kurdistan province in the west of Iran, with the aim of investigating the prevalence of people suspected of having mental disorders in the population with disabilities and related socioeconomic inequalities.

Methods
Study design and participants
This descriptive-analytical cross-sectional study was carried out in 2023 on individuals aged 18 and older with physical and sensory (sight, hearing, and speech) disabilities in Sanandaj city. In the initial stage, the sample size was calculated to be 613 individuals using the following formula, with p set at 9.2% (use of mental health services) (26), d=0.023 (accuracy rate), and α=0.05 (type 1 error) (Equation 1). A simple random sampling was conducted from a pool of 5934 individuals with physical and sensory disabilities in Sanandaj. This pool was obtained from the welfare organization of Kurdistan Province, which provided a comprehensive list of individuals along with their addresses and contact numbers. Each person in the sampling pool was assigned a unique number to create a sampling frame. Subsequently, a sample size of 607 individuals was generated using Excel. Sanandaj city, the capital of Kurdistan Province, has a population of over 500,000. Ultimately, 607 individuals took part in our study.

$$n = \frac{\left(Z_{1-\frac{a}{2}}\right)*p(1-p)}{d^2} \quad \text{Equation (1)}$$

Data collection and measurements
A two-part questionnaire was used in order to collect data for this study. The first part consisted of age, sex, type of disability, basic health insurance status, supplementary health insurance, education, employment status, and economic status (wealth assets). The second part included Goldberg's 28-item questionnaire (GHQ-28) that was used as a screening tool for mental disorders (20). The GHQ-28 comprises four scales, each containing seven questions: somatic symptoms, anxiety and sleep disorders, social dysfunction, and depression symptoms. Each dimension is assessed using a four-option scale: "much more than usual" (score 3), "rather more than usual" (score 2), "no more than usual" (score 1), and "not at all" (score 0). Each subscale features seven multiple-choice questions based on a Likert scale, scored from 0 to 3. The total score for the questionnaire ranges from 0 to 84, where a score of 0 to 22 is considered normal, 23 to 40 indicates mild mental disorder, 41 to 60 reflects moderate mental disorder, and 61 to 84 suggests severe mental disorder. For each scale, scores range from 0 to 21, with 0 to 6 indicating normal condition, 7 to 11 showing mild disorder, 12 to 16 reflecting moderate disorder, and 17 to 21 indicating severe disorder. Overall, a score above 22 and a score above six on subscales signify the presence of disorder symptoms. This questionnaire has previously been translated into Persian, and its validity and reliability have been established (20).

Statistical analysis
Principal component analysis (PCA) was employed to assess economic status based on asset data, including ownership of a computer or laptop, dishwasher, washing machine, air conditioner, vacuum cleaner, microwave, color TV, ability to travel, car ownership, and home ownership. This

statistical method has been extensively utilized in prior research (27, 28). Pearson's chi-square test was utilized to analyze the differences in the prevalence of severity of mental disorder suspicions among respondents. A logistic regression analysis with maximum likelihood estimation was conducted to identify the determinants of unmet mental health service needs and their primary reasons. A 95% confidence interval (CI) was calculated for all estimations. The adjusted logistic regression method was applied to explore the independent relationships of all variables with a p-value less than 0.2 in the univariate analysis. Both crude and adjusted odds ratios (OR) with their CIs were provided, using a significance level of 0.05. To assess socioeconomic-related inequality regarding the prevalence of mental disorder suspicions, the concentration index (C) and concentration curve (CC) were employed. In forming the CC, individuals were sorted by their socioeconomic status, and the cumulative percentage of the population was plotted against the cumulative percentage of suspicions of mental disorder. A CC above (or below) the line of equality indicates that the health variable is concentrated among poorer (or richer) individuals. A positive (or negative) value signifies concentration among the rich (or poor), while a C value of zero indicates no inequality. Data analysis was performed using STATA software version 16.0 (Stata Corp, College Station, TX, USA).

Results

A total of 607 people (response rate: 99%) participated in this study, with 317 men (52.2%) and 290 women (47.8%). The prevalence of mental disorders suspicion was 56.7% (344 people), and its prevalence based on the severity of the disorder was 29.7% mild, 16.6% moderate, and 10.4% severe. The prevalence of suspicions of mental disorders based on the demographic characteristics of the study population is shown in Table 1.

Table 2 shows the prevalence of mental disorders suspicions based on the four dimensions of GHQ-28. The prevalence of symptoms among men was as follows: somatic symptoms at 40.1%, anxiety symptoms at 45.1%, social dysfunction symptoms at 44.4%, and depression symptoms at 48.1%. In women, the prevalence rates were higher, with somatic symptoms at 42.3%, anxiety symptoms at 53.8%, social dysfunction symptoms at 45.6%, and depression symptoms at 55.5%. The prevalence of depression symptoms was significantly higher among women than men (Table 2).

Table 3 shows the unadjusted and adjusted associations between sociodemographic variables and the prevalence of mental disorders suspicions.

Women reported 1.55 times more likely to have symptoms of mental disorders than men (*P*=0.026, 95% CI: 1.05-2.29). People under 30 years old are about 3.5 times more likely than the elderly (*P*<0.001, 95% CI: 1.55-5.76), the

Table 1. The ratio of Suspected Mental Disorders by Demographic Variables (n=607)

Variable	Suspected cases (n=344, 56.7%)	Prevalence rate (56.7%) by severity			P-value*
		Mild (29.7%)	Moderate (16.6%)	Severe (10.4%)	
Gender					
Male	162 (51.1)	88 (27.8)	46 (14.5)	28 (8.8)	0.031
Female	182 (62.8)	92 (31.7)	55 (19.0)	35 (12.1)	
Age group					
Under 30	131 (79.4)	68 (41.2)	39 (23.6)	24 (14.6)	<0.001
30-59	153 (49.7)	78 (25.3)	42 (13.6)	33 (10.7)	
Above 60	60 (44.8)	34 (25.4)	20 (14.9)	6 (4.5)	
Occupation					
Employed	240 (69.6)	127 (36.8)	69 (20.0)	44 (12.8)	<0.001
Unemployed	104 (39.7)	53 (20.2)	32 (12.2)	19 (7.3)	
Type of disability					
Physical	222 (55.2)	115 (28.6)	65 (16.2)	42 (10.5)	0.864
Vision	60 (60.6)	33 (33.3)	16 (16.6)	11 (11.1)	
Hearing	41 (56.9)	24 (33.3)	11 (15.3)	6 (8.3)	
Vocal	21 (61.8)	8 (23.5)	9 (26.5)	4 (11.8)	
Education					
Illiterate	50 (58.8)	26 (30.6)	14 (16.5)	10 (11.8)	0.980
Under Diploma (Primary and Secondary)	156 (55.3)	78 (27.7)	51 (18.1)	27 (9.6)	
Diploma	86 (57.3)	49 (32.7)	22 (14.7)	15 (10.0)	
University	52 (57.8)	27 (30.0)	14 (15.6)	11 (12.2)	
Complementary health insurance					
Yes	320 (60.4)	164 (30.9)	95 (17.9)	61 (11.5)	<0.001
No	24 (31.2)	16 (20.8)	6 (7.8)	2 (2.6)	
Economic status					
The poorest	106 (75.2)	58 (41.1)	29 (20.6)	19 (13.5)	<0.001
Poor	90 (75.0)	46 (38.3)	29 (24.2)	15 (12.5)	
Middle	63 (60.6)	32 (30.8)	20 (19.2)	11 (10.6)	
Rich	43 (35.5)	20 (16.5)	11 (9.1)	12 (9.9)	
The richest	42 (34.7)	24 (19.8)	12 (9.9)	6 (5.0)	

* Pearson's chi-square test was also used for analysis.

Table 2. Gender Distribution of Individuals with Mental Disorders According to the Four Domains of GHQ-28

GHQ-28 Dimension	Male (%)	Female (%)	Total (%)	*P*-value**
Somatic symptoms				
Yes	65 (40.1)	77 (42.3)	142 (41.3)	0.079
No	97 (59.9)	105 (57.7)	202 (58.7)	
Anxiety symptoms				
Yes	73 (45.1)	98 (53.8)	171 (49.7)	0.003
No	89 (54.9)	84 (46.2)	173 (50.3)	
Social dysfunction symptoms				
Yes	72 (44.4)	83 (45.6)	155 (45.1)	0.095
No	90 (55.6)	99 (54.4)	189 (54.9)	
Depression symptoms				
Yes	78 (48.1)	101 (55.5)	179 (52.0)	0.001
No	84 (51.9)	81 (44.5)	165 (47.0)	

*General Health Questionnaire ** Pearson's chi-square test was also used for analysis.

Table 3. Univariate and Multivariate Logistic Regression Models for the Ratio of Individuals with Suspected Mental Disorders

Variable	Univariate logistic regression		Multivariate logistic regression	
	Unadjusted Odds Ratio (95% CI)	*P*-value	Adjusted Odds Ratio (95% CI)	*P*-value
Gender				
Male	1 (Reference)		1 (Reference)	
Female	1.61 (1.16-2.23)	0.004	1.55 (1.05-2.29)	0.026
Age group				
Under 30	2.75 (1.85-5.89)	<0.001	3.46 (1.55-5.76)	<0.001
30-59	1.21 (0.81-1.82)	0.344	1.13 (0.70-1.81)	0.610
Above 60	1 (Reference)		1 (Reference)	
Occupation				
Employed	1 (Reference)		1 (Reference)	
Unemployed	3.47 (2.47-4.86)	<0.001	4.10 (2.74-6.14)	<0.001
Type of disability				
Physical	1 (Ref.)		-	-
Vision	1.24 (0.79-1.95)	0.334	-	-
Hearing	1.07 (0.64-1.77)	0.787	-	-
Vocal	1.30 (0.63-2.68)	0.462	-	-
Education				
Illiterate	1 (Reference)			
Under Diploma	0.86 (0.53-1.41)	0.568	-	-
(Primary and Secondary)				
Diploma	0.94 (0.54-1.61)	0.824	-	-
University	0.95 (0.52-1.74)	0.888	-	-
Complementary health insurance				
Yes	1 (Reference)		1 (Reference)	
No	3.36 (2.01-5.61)	<0.001	2.78 (1.49-5.20)	0.001
Economic status				
The poorest	5.69 (3.33-9.72)	<0.001	4.23 (2.34-7.62)	<0.001
Poor	5.64 (3.23-9.85)	<0.001	4.21 (2.28-7.78)	<0.001
Middle	2.89 (1.67-4.97)	<0.001	2.32 (1.25-4.30)	0.007
Rich	1.03 (0.61-1.75)	0.893	0.76 (0.41-1.37)	0.368
The richest	1 (Reference)		1 (Reference)	

Adjusted model by removing all variables with a higher p-value of 0.2.

Table 4. Concentration Index for the Ratio of Individuals with Suspected Mental Disorders

Variable	Concentration index	Standard error	95% confidence interval	*P*-value
Prevalence of suspicion for mental disorders	-0.395	0.043	-0.480, -0.309	<0.001

unemployed are 4.1 times more likely than employed people (*P*<0.001, 95% CI: 2.74-6.14), people with supplementary insurance are about 2.8 times more likely than people without supplementary insurance (*P*=0.001, 2.78; 95% CI: 1.49-5.20) and people from the poorest class are 4.2 times more likely than the richest class (*P*<0.001, 95% CI: 2.34-7.62) to have symptoms of mental disorders (Table 3).

The result of socioeconomic-related inequality for prevalence of suspicion for mental disorders is shown in Table 4. The concentration index value indicates that the prevalence of suspicion for mental disorders is significantly concentrated among individuals with lower economic status (C= -0.395, 95% CI: -0.480 to -0.309) (Table 4).

Additionally, as illustrated in Figure 1, the concentration curve for the prevalence of suspicion for mental disorders is positioned above the line of equality. This indicates that the higher prevalence is concentrated among individuals with lower economic status (Figure 1).

Discussion

According to the findings of this study, more than 50% of people with disabilities were suspected of having mental disorders, which is much higher compared to the general population. These findings show the value of mental health screening among adults with disabilities and ensuring their access to mental health services. People with disabilities are vulnerable groups and are more likely to suffer from mental disorder symptoms than the general population (29). People
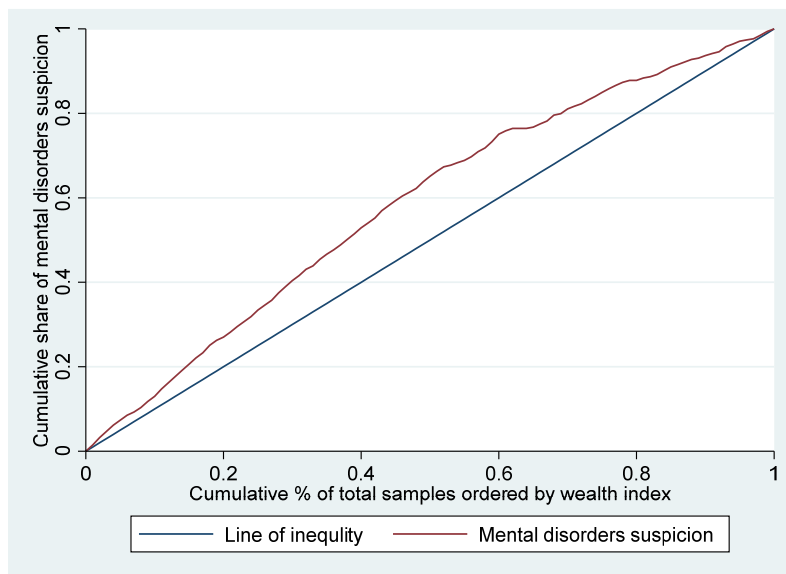
Figure 1. Concentration curve for the prevalence of mental disorders suspicion

with disabilities in Iran face various cultural, economic, and social barriers that make them susceptible to mental disorders and, on the other hand, limit their access to mental health services (19, 23, 24). For instance, in Iran, most mental health services are not covered by basic health insurance, creating a financial barrier that hinders access to these services (26). However, more emphasis could be placed on exploring how cultural stigma specifically impacts mental health care access and outcomes in Iran. Research indicates that cultural stigma can significantly affect help-seeking behaviors and the quality of care received by individuals with mental health issues. For instance, a study discusses how stigma can lead to discrimination, resulting in lower rates of treatment and negative health outcomes (30). Similarly, a study in low-and middle-income countries highlights that individuals with mental health issues in stigmatized cultures often avoid seeking care due to fear of being labeled (31).

Although there is no data on the prevalence of mental disorders among the disabled population in Iran, according to a national study carried out on the general population over 15 years old in 2015, about 23% of people were suspected of having mental disorders (20). According to a study, the prevalence of mental distress among adults with disabilities was reported to be 33%, which was much higher than the population without disabilities (7.2%) (12). In another study conducted in the U.S. from February to March 2021, 64.1% of adults with disabilities reported experiencing adverse mental health symptoms (32).

In addition, our study revealed that the most common disorders were depression (52%) and anxiety (49.7%), which were significantly more among women than men. Depression is one of the most prevalent mental disorders, affecting 300 million people globally, with 75% of these cases occurring in low- and middle-income countries (29). Although there is no data available regarding the prevalence of depression and anxiety in the disabled population in Iran, according to a national study, anxiety (30%) was reported

as the most common mental disorder in the general population (20).

In developing countries like Iran, people with disabilities face social and cultural problems (such as non-acceptance by society and discrimination), physical barriers (lack of appropriate urban space and lack of access to suitable public transportation), restrictions in doing daily activities (due to dependence on others and reduced self-confidence), financial pressure and problems in accessing health services which can cause conditions that increase the risk of depression and anxiety(1, 7, 18, 23, 25, 33). Depression and anxiety among the population with disabilities in different countries have been reported to be more common than the general population (32, 34, 35). For instance, in a study among the population over 18 years of age with disabilities in the United States, the prevalence of depression between states was estimated to vary from 8.4% (San Francisco) to 44% (Orleans Parish) (7). In Nepal, about 77% of participants with physical disabilities had experienced depression symptoms (29). A study in South Korea reported physical disability as a risk factor for depression (36).

In our study, based on the multivariate logistic regression model, women had a higher chance of having symptoms of mental disorders than men. In general, mental disorders in developing countries occur more in women due to a combination of social, economic, and cultural factors, as well as gender discrimination (37, 38). Violence, abuse, and gender discrimination are common problems in developing countries and affect women more significantly, and disability can exacerbate these inequalities (11, 39, 40). Research shows that women with disabilities often encounter multiple layers of discrimination, which can lead to increased vulnerability to mental health issues. For example, societal norms regarding femininity and caregiving can create additional pressures that affect their mental well-being (41). This addition not only enriches our analysis but also emphasizes the need for targeted interventions that address both gender and disability in mental health care.

Younger people were more likely to have symptoms of mental disorders than older ones. This finding is consistent with the results of a number of other studies (11, 12). For example, the findings of Okoro et al.'s study in the US showed that people with disabilities at a younger age were more likely to suffer from mental disorders (42). In addition, younger individuals may face unique challenges related to identity formation and social acceptance, which can further complicate their mental health landscape (43). This issue can be due to coping with their limitations and the use of coping strategies by elderly people in the face of tensions, stresses, challenges, and life problems.

In addition, being unemployed, not having supplementary health insurance, and having low economic status were risk factors for developing mental disorders. All three of these variables are related to the individual's economic status, showing the significant role of the economic variable in preventing mental disorders. Justice-oriented financial policies that support people with disabilities by improving their living conditions and creating suitable job opportunities can prevent the occurrence of mental disorders among them (11, 25). The prevalence of unemployment among people with disabilities in developing countries, including Iran, is more vulnerable than the general population, which can exacerbate injustices and the unfavorable situation of this vulnerable group (11, 24, 33). Studies in Iran show that not having supplementary health insurance is a risk factor for not using health services, experiencing catastrophic healthcare expenditures, and having poor health among the disabled (25, 26).

In our study, the value of the concentration index showed that the prevalence of mental disorders does not have the same distribution among different economic classes, and it is significantly higher among people with lower economic status. This concentration can be due to poverty, lack of access to mental health services, tolerance of social pressures, and lack of access to educational and job opportunities for people with disabilities in lower economic classes (11, 13, 36, 44). Research has shown that financial support can alleviate some of the stressors associated with poverty, while employment programs can provide individuals with disabilities not only with income but also with a sense of purpose and community engagement. A national study in Iran among people with disabilities showed that more than 50% of the perceived need for mental health services was not met, and its prevalence was significantly higher among people belonging to poorer families (26). This unmet need underscores the importance of addressing socioeconomic barriers to enhance access to mental health care. By implementing targeted financial policies, developing employment initiatives, and improving educational access, we can potentially reduce the mental health burden on this vulnerable population. Future research should focus on evaluating the effectiveness of such interventions in improving mental health outcomes for individuals with disabilities, thus contributing to a more equitable healthcare system.

Limitations

This study had several limitations that should be considered when interpreting the findings. The first limitation pertains to the sampling frame, as the research was conducted solely on individuals with disabilities whose information was available in the database of the Kurdistan Province Welfare Organization. This database does not encompass all people with disabilities in Sanandaj. Secondly, the study was limited to an urban population in one city, which may affect the generalizability of the results to rural populations and the entire country.

Conclusion

Based on the findings of this study, a significant percentage of individuals with disabilities are suspected of having mental disorders, with a notable concentration among economically disadvantaged groups. To address these disparities, it is essential for health policies to prioritize the prevention and screening of mental health issues among people with disabilities, ensuring their access to necessary services. Specific actions should include establishing community-based mental health programs, training healthcare providers on the unique needs of this population, and advocating for financial assistance to make mental health services affordable. Additionally, public policies should focus on increasing employment opportunities and improving the economic status of individuals with disabilities. By implementing these targeted interventions, we can better support this vulnerable population and promote their mental well-being.

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