

Profile of Leprosy Patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021

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Abstract. Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* that attacks several parts of the body, especially the upper respiratory tract, skin, and peripheral nerves. Indonesia is the third country with the most leprosy in the world. This study aims to determine the profile of leprosy patients at the Dermatology and Venereology Polyclinic Dr. M. Djamil Padang Hospital in 2018-2021. This research is descriptive retrospective with total sampling technique using secondary data in the form of medical records. The sample of this study were all leprosy patients in 2018-2021 who were fulfilled inclusion criteria, with a total of 39 patients. The results showed that the most age group was >14 years (100%), the most gender was male (74.36%), the most residence was Padang (33.33%), and almost all leprosy patients (92.31%) had no history of household contact with leprosy patients. Most of the leprosy patients were of the multibacillary type (74.36%) with positive smear results (46.15%), without leprosy reaction (61.54%), and the most disability level that occurred was grade 0 disability (48.72%). The conclusion of this study is that most cases of leprosy at the Dermatology and Venereology Polyclinic RSUP Dr. M. Djamil Padang in 2018-2021 aged >14 years, male, having address in Padang City, had no history household contact, multibacillary type, positive smear result, without reaction, and level 0 disability.

Keywords: Leprosy, Dermatology and Venereology Polyclinic, Acid Fast Bacilli

1. INTRODUCTION

Leprosy or Morbus Hansen is a chronic infectious disease caused by *Mycobacterium leprae*. Leprosy affects several parts of the body, especially the upper respiratory tract, skin, and peripheral nerves (Makalew, 2020). Leprosy is characterized by numb skin lesions, thickening of the peripheral nerves with impaired nerve function and the presence of acid-resistant bacteria (BTA) (Nala, 2015). Leprosy is feared because it can cause ulceration, mutilation, and deformity. Lepers not only suffer from the disease, but are also ostracized by the surrounding community due to irreversible major nerve damage in the face and extremities, motor and sensory, as well as with recurrent damage to anesthetic areas accompanied by paralysis and muscle atrophy (Djuanda, 2016).

Based on WHO data in 2019, there were 177,175 registered cases and 202,185 new cases of leprosy worldwide. The prevalence rate was recorded at 0.22 per 10,000 population, and the new case detection rate was 2.59 per 100,000 population at the global level. The Southeast Asia region accounted for 68.9% of the total global new cases, followed by the Americas (14.3%) and Africa (9.7%). The Eastern Mediterranean region accounted for 2% of

new leprosy cases with the Western Pacific region accounting for 1.9% of new leprosy cases (Rahevar, 2021). In 2018, the country reporting the highest number of new leprosy cases was India with 120,334 cases, followed by Brazil with 28,660 cases and Indonesia with 17,017 cases. These three countries accounted for more than 80% of the global leprosy burden (Islam, 2021).

Indonesia is a country with a population of 271,066,366 people. Based on data from the Ministry of Health of the Republic of Indonesia in 2020, the prevalence of leprosy in Indonesia was 0.49 cases per 10,000 population and the new case finding rate was 4.12 cases per 100,000 population. Over the past ten years, there has been a relative downward trend in both the prevalence rate and the new case detection rate (NCDR) of leprosy (Primadi, 2021). In 2020, there were 11,173 new cases, 86% of which were multibacillary type, of which 7,028 cases were found in males and 4,145 cases in females. Of the 11,173 new cases, 35 of them were found in West Sumatra (Primadi, 2021).

Leprosy is an infectious disease that can cause very complex problems, not only from a medical perspective, but extending to economic, social and psychological issues. This is because leprosy has a huge stigma in society, not because it causes death but because of the permanent disability it causes (Prasetyaningtyas, 2017).

Leprosy has various precipitating factors including age, gender, and a history of household contact with leprosy patients. Children under the age of 14 years in Indonesia account for $\pm 13\%$, but children under the age of 1 year are rare. The highest frequency is found in the age group between 25-35 years (Djuanda, 2016). Leprosy patients are more likely to be male than female with a prevalence of 61.2%. Male leprosy patients are also more likely to experience physical disability than female leprosy patients (de Paula, 2019). People in household contact with leprosy sufferers have an incidence rate almost ten times that of those without household contact (Manyullei, 2012).

Many factors can affect the prognosis and management of leprosy, including the type of leprosy, the type of leprosy reaction, and the degree of disability. There are two types of leprosy: multibacillary and paucibacillary. People with multibacillary leprosy are four times more likely to have physical disability than those with paucibacillary type (de Paula, 2019). The reaction type also affects the prognosis of leprosy. Reaction types consist of type 1 or reversal reaction and type 2 or erythema nodosum leprosum (ENL) reaction. The hallmark of a type 1 reaction is acute inflammation of the skin or nerve lesions or both. Type 2 leprosy reaction or ENL has manifestations of extensive erythema lesions, inflammatory nodules, and superficial or deep papules (Vionni, 2016).

Based on the above background and because there is no recent research related to the profile of leprosy patients, the researcher is interested in conducting a study with the title Profile of Leprosy Patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021.

2. LITERATURE REVIEW

Leprosy ranks second only to tuberculosis in the order of severity of human mycobacterial diseases. Leprosy is a chronic granulomatous disease caused by *Mycobacterium leprae* that can affect peripheral nerves, skin and mucous membranes (Geluk, 2018). In 2019, there were 177,175 registered leprosy cases and 202,185 new leprosy cases worldwide. The highest prevalence of leprosy in the world is in the country of India, followed by Brazil, and Indonesia in third place. The prevalence rate was recorded at 0.22 per 10,000 population, and the new case detection rate was 2.59 per 100,000 population at the global level (Rahevar, 2021). To establish the diagnosis of leprosy, it is necessary to look for the cardinal signs, namely: abnormalities/lesions skin in the form of patches white (hypopigmentation), redness (erythema) and numbness (anesthesia), peripheral nerve thickening accompanied by impaired nerve function (sensory, motor and autonomic disorders), presence of acid-resistant bacilli (BTA) in skin tissue scrapings (slitskin smears) (Lapian, 2012). Leprosy is a public health problem due to the disability it causes in the eyes, hands or feet. Diagnosis and treatment of leprosy should be done as early as possible, as the longer the delay from the discovery of signs of leprosy to the start of treatment, the greater the risk of disability due to progressive nerve damage (Sarkar, 2012). Data on physical disability in people with leprosy varies. WHO estimates that about 25% of people with leprosy in the world experience disability. Patients with leprosy who are at risk of disability are those who are late for MDT treatment, those with reactions, especially reversal reactions, those with multiple skin tags, and those with peripheral nerve pain or enlargement nerves (Sarkar, 2012).

3. RESEARCH METHOD(S)

This study is a descriptive study with a retrospective approach using medical record data of leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital. This study used secondary data in the form of medical records of leprosy patients registered at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021.

The population of this study were all leprosy patients registered at the Medical Records Installation of Dr. M. Djamil Padang Hospital in 2018-2021. This study sample is all populations that meet the inclusion criteria. Inclusion criteria: all medical records of patients diagnosed with leprosy registered at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Hospital Padang in 2018-2021.

The sampling technique in this study was total sampling, where all subjects who met the inclusion criteria were selected as samples. In this study, 39 samples were obtained that met the inclusion criteria. All samples were included as a source of research data.

Secondary data in the form of medical records were collected from the Medical Records Installation at Dr. M. Djamil Hospital Padang. From the medical records, the data needed for this study were taken, such as age, gender, place of residence, history of household contact with leprosy patients, type of disease, BTA test results, type of reaction, and level of disability. The collected data were then processed and analyzed with the help of the Statistical Package for the Social Science (SPSS) 15.0 version for Microsoft Windows. This study used univariate data analysis. The analysis in this study will produce data in the form of frequency distribution and percentage of each variable. This research has passed ethical review with letter number: LB.02.02/5.7/98/2022

4. FINDINGS AND DISCUSSION

Characteristics of research subjects

This study was conducted at the Medical Records Installation and Skin and Kelamin Polyclinic of Dr. M. Djamil Hospital Padang from February 2022 to April 2022 using the total sampling method. The subjects of this study were 39 samples of leprosy medical records from 2018- 2021.

Table 1 shows the results of the study that the most age of leprosy patients at the Skin and Kelamin Polyclinic of Dr. M. Djamil Padang Hospital in 2017-2021 was >14 years old, namely 39 samples (100%).

Table 1 Distribution by Age of Leprosy Patients

Age	Frequency (n=39)	Percentage (%)
≤14 years	0	0
>14 years	39	100

Table 2 shows the results of the study that the most common gender of leprosy patients at the Skin and Kelamin Polyclinic of Dr. M. Djamil Padang Hospital was male, namely 29 samples (74.36%), while the female gender was 10 samples (25.64%).

Table 2 Distribution by Sex of Leprosy Patients

Gender	Frequency (n=39)	Percentage (%)
Male	29	74,36
Female	10	25,64

Table 3 shows that the place of residence of the most leprosy patients was Padang City with 13 samples (33.33%), followed by Pesisir Selatan Regency, Padang Pariaman Regency, South Solok Regency, and Pesisir Selatan Regency. Pasaman, Tanah Datar Regency, Jambi, Agam Regency, West Pasaman Regency, Riau, and Bengkulu. Meanwhile, there were no leprosy patients from Dharmasraya Regency, Mentawai Islands Regency, 50 Kota Regency, Sijunjung Regency, Solok Regency, Bukittinggi City, Padang Panjang City, Pariaman City, Payakumbuh City, Sawahlunto City, and Solok City.

Table 3 Distribution based on residence of leprosy patients

Place of Residence	Frequency (n=39)	Percentage (%)
Agam Regency	1	2,56
Dharmasraya Regency	0	0
Mentawai Islands Regency	0	0
District 50 City	0	0
Padang Pariaman Regency	5	12,82
Pasaman Regency	2	5,13
West Pasaman Regency	1	2,56
South Coastal District	7	17,95
Sijunjung Regency	0	0
Solok District	0	0
South Solok Regency	3	7,69
Tanah Datar District	2	5,13
Bukittinggi City	0	0
Padang City	13	33,33
Padang Panjang City	0	0
Pariaman City	0	0
Payakumbuh City	0	0
Sawahlunto City	0	0
Solok City	0	0
Jambi	2	5,13
Riau	1	2,56
North Sumatra	1	2,56
Bengkulu	1	2,56

Table 4 shows that 36 samples (92.31%) of leprosy patients had no history of household contact, while 3 samples (7.69%) of leprosy patients had a history of household contact with leprosy patients.

Table 4 Distribution of leprosy patients by household contact history

Contact History Housemates	Frequency (n=39)	Percentage (%)
There is	3	7,69
None	36	92,31

Table 5 shows that multibacillary type is the most common type of leprosy in the Dermatology and Venereology Polyclinic of Dr. M. Djamil Hospital Padang with 29 samples (74.36%), while pausibacillary type was found in 10 samples (25.64%).

Table 5 Distribution by disease type of leprosy patients

Disease Type	Frequency (n=39)	Percentage (%)
Pausibasiler	10	25,64
Multibacillary	29	74,36

Table 6 shows the results of the study that most BTA count results were positive with 18 samples (46.15%), while 17 samples (43.59%) found negative results. The remaining 4 samples (10.26%) BTA count results were not included.

Table 6 Distribution Based on BTA Count Results of Leprosy Patients

BTA Count Result	Frequency (n=39)	Percentage (%)
Positive	18	46,15
Negative	17	43,59
Not included	4	10,26

Table 7 shows the results of the study that 24 samples (61.54%) of leprosy patients did not experience reactions, while 15 samples (38.46%) of leprosy patients experienced reactions.

Table 7 Distribution by reaction type of leprosy patients

Reaction Type	Frequency (n=39)	Percentage (%)
Leprosy with reaction	15	38,46
Leprosy without reaction	24	61,54

Table 8 shows that 19 samples (48.72%) of leprosy patients had no disability, while 12 samples (30.77%) of leprosy patients had grade 1 disability and 8 samples (20.51%) of leprosy patients had grade 2 disability.

Table 8 Distribution by level of disability of leprosy patients

Disability Level	Frequency (n=39)	Percentage (%)
Level 0 (without defects)	19	48,72
Level 1	12	30,77
Level 2	8	20,51

Discussion

Based on the results of the study, the largest age group in leprosy cases at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021 was the age group >14 years, as many as 39 samples (100%). The results of this study are in line with research conducted at the Inpatient Hospital of Prof. Dr. R. D Kandou Manado for the 2016-2018 period which states that the highest prevalence of leprosy occurs in patients aged >14 years (98%) (Makalew, 2020). Research conducted at URJ Dermatology and Venereology Health of RSUD Dr. Soetomo Surabaya for the period 2011-2015 also stated the

same thing that the highest prevalence of leprosy occurred at the age of >14 years (92.3%) (Aisyah, 2018).

The results of this study illustrate the theory that leprosy is more at risk in productive age. Leprosy can affect any individual at any age with an age range of 3 weeks to more than 70 years, but young and productive age, especially 20 to 30 years old, is the most common age for leprosy (Minister, 2019) Productive age is more at risk of leprosy due to a high level of exposure to external (environmental) factors (Manyullei. 2012). The body's immune system will decline with age. The natural immune system such as NK cells will experience a decrease in phagocytosis function (Prahasanti, 2019). Adaptive immune responses such as naive T cells, IL-2, IL-2 receptors, and CD28 will also decrease in number in old age (Prahasanti, 2019).

Based on the results of the study, the sex of most leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021 was male, as many as 29 people (74.36%), followed by 10 women (25.64%). The results of this study are in line with research conducted at Prof. Dr. R. D. Kandou Hospital which states that the prevalence of leprosy in men is higher (82.69%) compared to women (17.31%) (Makalew, 2020). Another study conducted at the Abepantai Health Center in Jayapura City in 2020 also stated the same thing that the prevalence of leprosy was more common in men (67%) than in women (33%) (Porong, 2020).

The results of this study illustrate the theory that leprosy is more likely to occur in men than women. Men work more and are more active outside the home so that they are more exposed to the outside environment which causes the possibility of leprosy transmission to be greater (Martoreli, 2021) The higher incidence of leprosy in men may be related to the role of testosterone in creating a favorable environment for *Mycobacterium leprae* growth. Testosterone stimulates anti-inflammatory cytokines associated with the Th2 response (Nobre, 2017). These factors cause leprosy bacilli to be higher in males compared to females.

Based on the results of the study, the place of residence of most leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021 was Padang City, namely 13 samples (33.33%). In second place was Pesisir Selatan Regency with 7 samples (17.95%), followed by Padang Pariaman Regency with 5 samples (12.82%), South Solok Regency with 3 samples (7.69%), Pasaman Regency, Tanah Datar Regency, and Jambi with 2 samples each (5.13%), and Agam Regency, West Pasaman Regency, Riau, and Bengkulu with 1 sample each (2.56%). The results of this study differ from the data from the West Sumatra Provincial Health Profile in 2017, which states that the highest incidence of leprosy occurred in Padang Pariaman Regency, namely 27 cases out of a total of 96 cases.

Meanwhile, the cases that occurred in Padang City were 2 cases out of a total of 96 cases (West, 2018).

Judging from the results of the study, the residence of many leprosy patients in Padang City can be caused by several things. Not all leprosy cases that occurred in level 1 health facilities in the region were referred to Dr. M. Djamil Hospital in Padang. Some of the criteria for referred leprosy are leprosy with complication, peripheral nerve thickening accompanied by impaired nerve function, reaction to MDT drugs, and leprosy cases with doubtful diagnosis (Minister, 2019). In some cases, patients from areas outside Padang City when seeking treatment at Dr. M. Djamil Padang Hospital did not include their area of origin, but included the address where they lived when seeking treatment in Padang City. Some of these factors led to the result that the place of residence of most leprosy patients in this study was Padang City.

Based on the results of the study on the presence of a history of home contact with leprosy patients, most leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021 were found to have no history of home contact, namely 36 samples (92.31%). The results of this study are in line with research conducted in Mendahara District, East Jabung Regency in July 2019 which also found that many of the leprosy patients in the area did not have a history of household contact (68.8%) (Kurniawati, 2020).

Leprosy patients who sought treatment at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Hospital Padang in 2018-2021 were mostly the first leprosy patients in their home. Judging from the results of the anamnesis listed in the patient's medical record, it was stated that there were no family or people living in the same house with the patient, or neighbors around the patient's house who suffered from leprosy. Based on the results of the anamnesis, it can be concluded that most of the leprosy patients who sought treatment were the first leprosy patients in their homes, so the rate of no history of household contact with leprosy patients is higher than the rate of history of household contact with leprosy patients.

Intimate, prolonged, repeated and continuous contact with people with leprosy, especially with the multibacillary type, is a risk factor for leprosy incidence. The higher the contact history of the household, neighbors and surrounding community, the higher the chance of leprosy spreading in that environment (Saragih, 2014).

Based on the results of the study, the most common type of leprosy at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021 was the multibacillary type, namely 29 people (74.4%), followed by the paucibacillary type as many as 10 people (25.64%). The results of this study are in line with research conducted at Prof. Dr.

R. D. Kandou Manado Hospital which states that the most common type of leprosy is the multibacillary type (100%) (Makalew, 2020). Research conducted at Budhi Asih Hospital in 2019 also stated the same thing that the multibacillary type of leprosy was more common (60.34%) compared to the paucibacillary type (39.66%) (Zuraida, 2020).

The percentage of multibacillary leprosy patients is greater than that of paucibacillary leprosy patients, which can be influenced by several factors, including the virulence of the bacteria, the immune system of the host, the knowledge and awareness of the patient, the speed of seeking treatment, the distance and availability of access to health services, socioeconomic conditions and the regularity of taking MDT drugs (Zuraida 2020). The most influential factor is the patient's body resistance or the state of the patient's cellular immune response. If the patient's cellular immune response is good, then a person infected with *Mycobacterium leprae* bacteria will manifest as paucibacillary type leprosy or even recover on their own. However, if the patient's cellular immune response is poor, it will manifest as multibacillary leprosy (Zuraida, 2020)

Based on the results of the study, of the total 39 samples studied, only 35 samples included the BTA test results, while the other 4 samples did not include the BTA test results. Most of the BTA test results of leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021 were positive, namely 18 samples (46.15%), while the negative BTA test results were 17 samples (43.59%). The results of this study are in line with research conducted at Prof. Dr. R. D. Kandou Manado Hospital which states that the most BTA test results are positive (55%) (Soumilena, 2014). The results of this study contradict research conducted at RSUD Budhi Asih which states that the most BTA test results for leprosy patients are negative (64.48%) (Zuraida. 2020).

BTA examination at Dr. M. Djamil Padang Hospital was carried out by counting the number of *Mycobacterium leprae* bacilli found in the skin from the slit-skin smear results. BTA examination results are said to be positive if a bacterial index (IB) of at least +1 is found, while it is said to be negative if 0 BTA is found in 100 LPs (Djuanda, 2016). BTA test results are related to the type of leprosy. Multibacillary leprosy will generally give a positive BTA result, while paucibacillary leprosy will give a negative BTA result (Djuanda, 2016). It can be seen from the results of the disease type study that the type of disease of most leprosy patients who seek treatment at Dr. M. Djamil Padang Hospital is the multibacillary type. Therefore, the discovery rate of positive BTA test results is also high.

Based on the results of the study, out of a total of 39 samples studied, 24 patients (61.54%) suffering from leprosy did not experience reactions, while 15 other leprosy patients (38.46) experienced reactions. Of the 15 patients who experienced reactions, 6 patients (15.38%) experienced type 1 reactions and 9 patients (23.08%) experienced type 2 leprosy reactions. The results of this study are in line with research conducted at the Haji Adam Malik Medan Hospital in 2015-2018 which stated that the distribution of patients without reactions was more than patients with reactions, namely 41 samples (51.9%).⁴⁴ Research conducted by Lymoora at URJ Skin Health and Kelamin RSUD Dr. Soetomo Surabaya from March to May 2016 entitled "Activity of Malondialdehyde (MDA) Levels in Leprosy Patients with Reaction and Without Reaction" also obtained the same results that the distribution of leprosy patients without reactions was more (59.3%) than leprosy patients with reactions (40.7%) (Lymoora, 2017).

A leprosy reaction is an acute episode in the course of leprosy with symptoms of constitution, activation, and or new skin florescence (Ramaswari, 2015). Leprosy reactions that can occur in leprosy patients are abnormal immune reactions by cellular immune responses or humoral immune responses that can be detrimental to the patient (Lymoora, 2017) Type 1 leprosy reaction (reversal) occurs due to an increase in cell mediated immunity. Reversal reactions cause inflammation in borderline type patients with clinical manifestations in the form of some or all of the existing lesions becoming more active or new lesions appearing in a relatively short time (Djuanda 2016). Type 2 reactions (ENL) result from increased immune complexes in the tissue. The clinical manifestations of ENL reactions are erythema and painful nodes with predilection in the arms and legs (Djuanda, 2016). This reaction occurs mainly in the multibacillary type, so the higher the number of bacteria, the greater the possibility of ENL (Harahap, 2019).

Based on the results of the study, the highest level of disability of leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital in 2018-2021 was level 0 disability (without defects), namely 19 samples (48.72%). The second most common order was level 1 disability as many as 12 people (30.77%) and the third most common order was level 2 disability, namely 8 people (20.51%). The results of this study are in line with a study entitled "Overview of Leprosy Reactions and Level of Disability in Leprosy Patients at Dr. M. Djamil Padang Hospital January 1, 2014 - October 31, 2018" which also states that the most common level of disability that occurs in leprosy patients is level 0 disability (43.9%) (Anriyani, 2019).

Disability is often experienced by leprosy patients before receiving treatment due to the lack of awareness of the disease among patients, their families, or the community.⁴⁶ The WHO divides leprosy disability levels into three, namely level 0 disability which means no disability, level 1 disability which means that it is caused by invisible sensory nerve damage such as loss of touch, and level 2 disability which means visible defects or damage to the eyes, hands or feet. The level of disability is used to assess the quality of leprosy disability management by staff. A high rate of grade 2 disability indicates that the community's knowledge of early signs of leprosy is low, resulting in delays in treatment. A high rate of leprosy without disability (grade 0 disability) indicates that the community's knowledge about leprosy is high and treatment is quick (Anriyani, 2019).

5. CONCLUSION AND RECOMMENDATION

The most common age of leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Hospital Padang was the age group of more than 14 years. The most common gender of leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Hospital Padang was male. Leprosy patients who seek treatment at the Dermatology and Venereology Polyclinic of RSUP. Dr. M. Djamil Padang, many of whom came from Padang City. Many of the leprosy patients who sought treatment at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang General Hospital did not have a history of household contact with leprosy patients. The most common type of leprosy patient at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Hospital Padang was the multibacillary type. The BTA count of most leprosy patients at the Dermatology and Venereology Polyclinic of Dr. Djamil Hospital Padang was positive. The most common reaction type for leprosy patients at the Dermatology and Venereology Polyclinic of Dr. M. Djamil Padang Hospital was no reaction. The most common level of disability for leprosy patients at the Skin and Genital Polyclinic of Dr. M. Djamil Hospital Padang was level 0 disability (no disability).

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