Original Article

Self-Care Activities among Old Age with Diabetic Foot Ulcer in Iraq

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Abstract

Background: Diabetic foot ulcer patients have different self-care activities, yet many of them do not know their importance in reducing symptoms and progression of the disease and preventing access to amputation of the foot. **Objective:** To identify self-care activities among old age with diabetic foot ulcer patients and identify the socio-demographical characteristics and clinical data of the study sample. Find out the relationship between the socio-demographical characteristics and clinical data with the patient's self-care activities. **Materials and Methods:** Descriptive cross-sectional study design. The study relied on the interview methods of a total of 100 patients. A non-probability convenience sample was used to select study sample. The study was conducted from 10th October 2021 to 15th May 2022 in Karbala city. **Results:** The study results show the highest percentage of the study samples were between 63 and 72 years old, educational attainment (25%) postgraduate, most of the study sample urban in percentage (66%), retired in percentage (31%), males in percentage (64%), and married in percentage (75%). Most of them (54%) have sufficient income to some extent. Concerning type of diabetes treatment, more percentage of the study samples used both insulin and oral hypoglycemic agents in percentage (47%), most of them have one another comorbidities besides diabetic foot in percentage (35%), the self-care activities of patients were within fair level by mean of score is (1.87%) in percentage (80%). **Conclusions:** Diabetic foot patients' adherence to self-care activities was unsatisfactory. This may be due to a lack of education and correct practices about foot care. The patient must assume responsibility for themselves in the first place, as well as hospitals take a greater responsibility to inspire the self-care activities in caring for themselves.

Keywords: Diabetic foot, diabetic neuropathy (DN), self-care activities, ulcers

Introduction

Diabetes mellitus (DM) is one of dangerous diseases worldwide.[1,2] The prevalence of DM varies greatly by socioeconomic level and geographic location. Since the turn of the century, society has evolved, making DM the most common disease in "North America and Europe," while this pathology is becoming more prevalent in developing Asia and South America. Similarly, a lot of people don't know they have this illness.[3,4] In 2015, 422 million people were diagnosed with DM.[2] The prognosis for DM is concerning because of the numerous chronic complications linked to the condition. These complications can be microvascular, like nephropathy, retinopathy, or "diabetic neuropathy, or macro-vascular," like coronary artery disease, stroke, or peripheral vascular disease, in addition to the neurological complications linked to diabetic foot peripheral disease (PD).[3,4] The microvascular complication that most frequently produces the appearance of PD is diabetic neuropathy (DN) affecting on the half of the patients after two decades of evolution due to high level of glucose (hyperglycemia). The PD is the demyelination of neuronal axons brought on by long-term hyperglycemia, which results in the structural and functional degeneration of the peripheral nerves, impairing peripheral sensitivity and leading to deformities and ulcerations. Although many

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diabetes patients lack in necessary knowledge to treat disorders, patient collaboration is a crucial component of PD treatments.[2]

Motor sensory disturbances in DN are particularly noticeable.[5] The upshot of sensory neuropathy is loss of sensitivity, which leaves the foot susceptible to bruises that cause skin break, leading to the development of foot ulcers.[2] Most of them directly associate age especially old age related to DM with the development of ulcers, gangrene, and ultimately amputation, which explains their low use of healthcare services. DM with the appearance of ulcers, gangrene, and finally amputation, which is why they have poor attendance at health services.[4] Many patients are also unable to receive effective prevention and management of self-care for foot ulcers due to a decline in health education about diabetic feet, which leads to healthcare professionals' low sensitivity and their limited attention spans as a result of the high volume of consultations.[6] The implementation of a multi-disciplinary team approach, accompanied by frequent thorough foot examinations, patient education about foot care involving essential hygienic habits, availability of suitable footwear, and prompt treatment of minor injuries, has the potential to decrease ulcer incidence by 50% and lower amputations by as much as 85%.[7] The major objective of this study is to identify the patient's self-care activities about diabetic foot care and its components.

Materials and Methods

Study design

A "descriptive cross-sectional study" was carried out to achieve the stated objective that include to assess of self-care management among old age with diabetic foot ulcers and finding out the relationship between the socio-demographical characteristics and clinical data with patients' self-care activities.

Study setting and period

The study began from October 10, 2021, to May 15, 2022, in Karbala at Imam Al-Hussein Medical City Hospital and Al-Kafeel Specialized Hospital.

Study sampling and sample method

The study relied on the interview methods of a total of 100 patients. A non-probability convenience sample was used to choose the study sample. The data collection process was started for the period from March 12 to April 14, 2022. The studied individuals were personally approached and interviewed through a pre-tested semi-structured questionnaire, whereas the items of interest were adopted from the available literature and designed to collect information about the respondents. It consists of three main parts: Part I Socio-demographic data (eight items), Part II Clinical and management of care data (15 questions), Part III Management of self-care activities consisting of four areas (foot examination, foot hygiene, foot care, and wearing foot). A pilot study was conducted to test the comprehensiveness and applicability of the research instrument to the Iraqi community system. Before collecting the data, revisions were made, including the removal of unsuitable items. Cronbach α was employed to assess reliability. The reliability value, Cronbach α, was 0.78, indicating that the questionnaire has an adequate degree of usefulness.

Statistical data analysis

The statistical analytical methods were employed by (SPSS-ver. 26). frequencies and percentages, standard deviation, mean of score, Chi-square test.

$$\text{Range of score} = \frac{\text{Max(MS)-Min(MS)}}{\text{Rating}} = \frac{3-1}{3} = 0.66$$

(I) Mean of scores less than (1–1.66) is evaluated as poor.
(II) Mean of scores equal to (1.67–2.33) is evaluated as fair.
(III) Mean of scores more than (2.34) is evaluated as good.

Ethical approval

The research was carried out in conformity with the ethical standards outlined in the Helsinki Declaration. Before collecting the sample, the patient's verbal and analytical consent were obtained. A local ethics committee examined and approved the research protocol, as well as the subject information and consent form, under the document number UAM/Ec/5/2017 (dated January 11, 2022).

Results

The present study [Table 1] shows that the highest percentage of sample's age were young adults between 63 and 72 years old. Concerning with sex, more than half of the samples were male, the percentage of the study samples were male. Regarding educational level, the most frequent educational degree in the present study was postgraduate. Concerning marital status, the highest of the samples were married. As for occupation, most of them were retired. Regarding residence, more than half of the samples were urban. Concerning economic status, most of the samples responded that their income was fairly enough.

The present study [Table 2] shows that the highest duration of diabetes was within 2 to 11 years. Concerning type of diabetes treatment, more percentage of the study samples were both insulin and oral hypoglycemic agents (OHAs). Regarding a number of other comorbidities besides, most of them have one and two as 35% and 34% respectively. Concerning foot ulcer episode, the highest percentages

Table 1: Distribution for demographic characteristics of study sample

Demographic	Categories	Frequency	Percent
Age (years)	53–62	33	33.0
	63–72	44	44.0
	73–82	12	12.0
	83–92	11	11.0
Sex	Male	64	64.0
	Female	36	36.0
Educational level	Illiterate	17	17.0
	Read and write	20	20.0
	secondary school	17	17.0
	Diploma	12	12.0
	Bachelor	9	9.0
	Postgraduate	25	25.0
Marital status	Single	2	2.0
	Married	75	75.0
	Divorced	1	1.0
	Widowed	22	22.0
How many children do you have?	≤1	5	5.0
	2–6	55	55.0
	7–11	38	38.0
	12+	2	2.0
Occupation	Employee	16	16.0
	Retired	31	31.0
	Special job	9	9.0
	Jobless	19	19.0
	Housewife	24	24.0
	Other	1	1.0
Residence	Urban	66	66.0
	Rural	34	34.0
Economic status	Not enough	54	54.0
	Fairly enough	36	36.0
	Enough	10	10.0

were 1st episode. Regarding duration of foot ulcer, the most frequent in the present study were 2 to 11 months. Concerning site of foot ulcer percentage of the study samples was forefoot. Regarding Wagner wound classification, more of the samples were grade 1. Concerning the cause of diabetic foot ulcer most of the samples were injury.

Regarding frequency of dressing change more than half of the samples were daily. Concerning type of cleaning solution, the highest percentage was saline. Regarding type of dressing most of the samples were dry gauze. Concerning treatment-related instruction/method most of the samples were restriction of mobility. Regarding history of related operations, most of the samples were none. Concerning the question do you take pain relief for your pain most of the samples answers were yes. Regarding the question does medication relive your pain most of the samples answers were yes [Table 3].

The overall assessment of self-care activities for diabetic foot patients showed that the most of the samples were within the fair level with an average score of 1.87% [Figure 1].

Table 4 shows that there is a non-significant relationship between the self-care activities of patients with diabetic foot ulcer and some demographic data at *P* value more than 0.05 except regarding Occupation there is a significant relationship at *P* value less than 0.05.

Table 5 shows that there is a non-significant relationship between the self-care activities of patients with diabetic foot ulcer and clinical data at *P* value more than 0.05 except regarding type of DM treatment.

Table 6 shows that there is a non-significant relationship between the self-care activities of patients with diabetic foot ulcer and diabetic foot care at *P* value more than 0.05 except with, type of dressing, type of cleaning, treatment-related instruction/method, type of dressing.

Discussion

Demographical data of study reveal that the (44.0%) are within the third age group 63 to 72 years old, and more than half of the samples were male. In another study the results indicated that majority of the study age range from

Table 2: Summary statistics by their clinical data of study sample

Clinical data	Categories	Frequency	Percent
Duration of diabetes	≤1 year	1	1.0
	2–11 years	49	49.0
	12–21 years	37	37.0
	22–31 years	11	11.0
	32–41 years	1	1.0
	42+ years	1	1.0
Type of diabetes treatment	Diet regimen	5	5.0
	Oral hypoglycemic agents	37	37.0
	Insulin therapy	11	11.0
	Both insulin and OHA	47	47.0
Number of other comorbidities besides	0	24	24.0
	1	35	35.0
	2	34	34.0
	≥3	7	7.0
Foot ulcer episode	First episode	38	38.0
	Second episode	36	36.0
	Third episode	21	21.0
	More than three-time	5	5.0
Duration of foot ulcer (months)	≤1	10	10.0
	2–11	65	65.0
	12–21	8	8.0
	22–31	10	10.0
	32–41	6	6.0
	52+	1	1.0
Site of foot ulcer	Forefoot	49	49.0
	Midfoot	35	35.0
	Hindfoot	16	16.0
Wagner wound classification	Grade 0	18	18.0
	Grade 1	27	27.0
	Grade 2	19	19.0
	Grade 3	8	8.0
	Grade 4	18	18.0
	Grade 5	10	10.0
The cause of diabetic foot ulcer	Improperly fitting footwear	16	16.0
	Injury	45	45.0
	Burns	8	8.0
	Spontaneous blisters	4	4.0
	Fungal infection	18	18.0
	There is no evidence for the cause	9	9.0

25 to 65 with a mean age 51.97 years and most of them 78.0% were men.[8]

Regarding educational level, the most of patient were within postgraduate level and married. In another study, the results showed that nearly two-thirds (64.3%) of the investigated diabetic elderly were married, while 19.6 and 11.3% of them could read and write but more than half (59.6%) of them were illiterate.[8] Concerning occupation, 31% of the study samples were retired with not enough income. Inconsistence with another study, nearly one-third (33.0%) of diabetic elderly were not working and housewife, while 63.5% of them had enough income monthly.[9] Regarding residence, more than half of the samples were urban. In another study, more than half of the patients (53.2%) lived in the urban urea.[10] Concerning with self-care management of patients the present study showed that most of the samples was within a fair level by mean of score is (1.87). In contrast with another study the results announced that majority respondents (64.70%) had poor personal self-care in foot care due to low self-care management.[11] As well as, in another study the results indicated that, Patient foot care was poor in 29.5% of cases, intermediate in 49.6% of cases, and good in 20.8% of cases.[12] Regarding the duration of diabetes, the patients within 2 to 11 years and type of diabetes treatment were both insulin and OHA as the highest percentage.

Table 3: Summary statistics by their management of diabetic foot care

Clinical data	Categories	Frequency	Percent
Frequency of dressing change	Daily	79	79.0
	Twice	16	16.0
	Other	5	5.0
Type of cleaning solution	Saline	56	56.0
	Sterile water	39	39.0
	Other	5	5.0
Type of dressing	Dry gauze	79	79.0
	Foam	4	4.0
	Saline soaked	2	2.0
	Antimicrobials	3	3.0
	Hydrocolloid	6	6.0
	Gel dressing	4	4.0
	Other	2	2.0
Treatment-related instruction/method	Total contact cast	10	10.0
	Footrest	9	9.0
	Back slab	4	4.0
	Orthosis	1	1.0
	Elevation of limb	8	8.0
	Sandal	1	1.0
	Restriction of mobility	28	28.0
	Insole	20	20.0
	Non-weight bearing walking with crutches	18	18.0
	Other	1	1.0
History of related operations	None	54	54.0
	Ray amputation	3	3.0
	Debridement	1	1.0
	Forefoot amputation	12	12.0
	Skin graft	4	4.0
	Below knee amputation	14	14.0
	Toe amputation	11	11.0
	Above knee amputation	1	1.0
Do you take pain relief for your pain	Yes	82	82.0
	No	18	18.0
Does medication relieve your pain	Yes	78	78.0
	No	22	22.0

And number of other comorbidities besides, most of them have one as (35%). In contrast with another study, the 253 (68.4%) of patients had a type two diabetes. Around half (48.6%) of the patients had an illness duration of less than 5 years. The majority of responders (91.1%) were aware of diabetic foot ulcers previously. Also, 132 (35.7%) of the patients had a history of foot ulcers in the past.[10] Concerning foot ulcer episode, the highest percentages were 1st episode as percentage (38%), duration of foot ulcer as 65%, the most frequent in the present study were 2 to 11 years. In another study the results indicated that 1st episode in percentage (7.6%) and 2nd episode in percentage (92.4%), duration of ulcer 5> was in percentage (28%) when 5< was in percentage (72%).[8] Concerning site of foot ulcer percentage of the study samples were fore foot in percentage (49%) In contrast with another study, the plantar or dorsal portion of the foot is where the lesions are typically found, most frequently on the backs of the fingers, the heel, or the heads of the metatarsal bones.[13] Regarding Wagner wound classification, more of the samples were grade 1. In contrast, a different study found that Wagner's grade 2 lesion, or a foot ulcer, was the most prevalent lesion on presentation in 42% of cases (n = 21), followed by grade 3 and grade 4 lesions in 34% and 12%, respectively, of patients. According to Akther *et al*.[14] 11% of individuals had diabetic feet, and 84% of them were men. Concerning the cause of diabetic foot ulcer most of the samples were injury as 45%. In contrast with another study, the majority of diabetic foot ulcers—about 45% to 60%—are solely neuropathic, whereas another 45% have both neuropathic and ischemic components.[15] Regarding frequency of dressing change more than half of the samples were daily. Concerning type of cleaning solution, the highest percentage was saline. The most of wounds

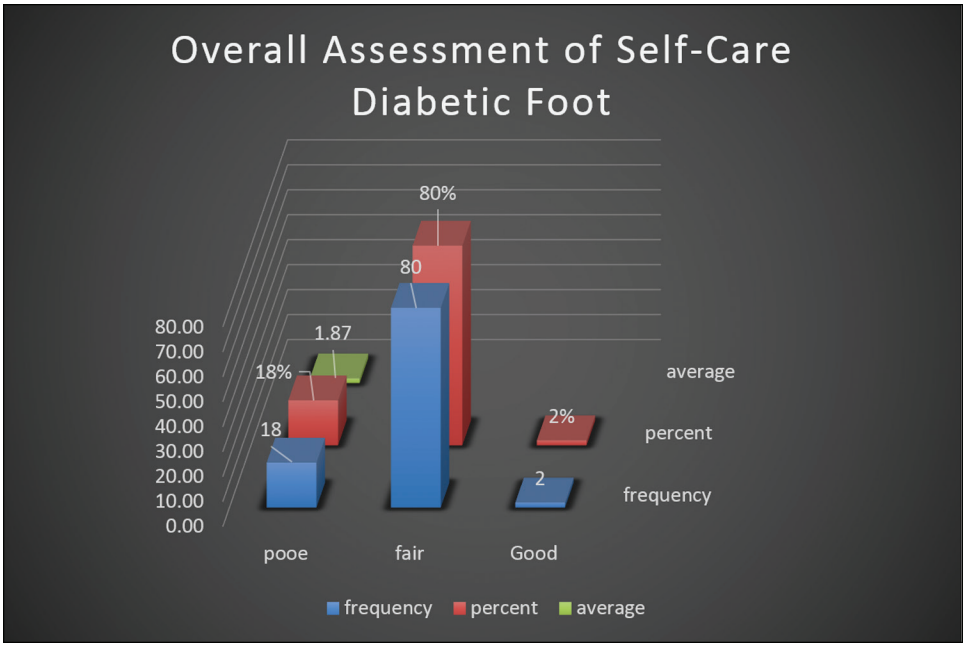

Figure 1: Overall assessment of self-care activities among diabetic foot patients

Table 4: Relationship between self-care activities levels of patients with diabetic foot ulcer and demographic data

Demographic data	Category	Levels			Value	Df	Asymptotic significance (2-sided)
		Fair	Good	Poor			
Age (years)	53–62	25	1	7	4.45	8	0.81 NS
	63–72	30	5	12			
	73–82	10	3	2			
	83–92	1	3	1			
Sex	Male	52	1	11	0.27	2	0.87 NS
	Female	28	1	7			
Educational level	Illiterate	13	0	4	8.23	10	0.60 NS
	Read and write	18	0	2			
	Secondary school	14	0	3			
	Diploma	9	0	3			
	Bachelor	8	0	1			
	Postgraduate	18	2	5			
Marital	Single	2	0	0	2.73	6	0.84 NS
	Married	61	2	12			
	Divorced	1	0	0			
	Widowed	16	0	6			
Occupation	Employee	12	2	2	18.29	10	0.05 S
	Retired	27	0	4			
	Special job	9	0	0			
	Jobless	12	0	7			
	Housewife	19	0	5			
	Other	1	0	0			
Residence	Urban	54	2	10	1.98	2	0.37 NS
	Rural	26	0	8			
Economic status	Not enough	40	0	14	8.19	4	0.08 NS
	Fairly enough	31	2	3			
	Enough	9	0	1			

Table 5: Relationship between self-care activities levels of patients with diabetic foot ulcer and some clinical date

Clinical data	Category	Levels			Value	Df	*P* value
		Fair	Good	Poor			
Duration of diabetes (years)	≤1	1	0	0	5.263[a]	10	0.87 NS
	2–11	41	2	6			
	12–21	28	0	9			
	22–31	8	0	3			
	32–41	1	0	0			
	42+	1	0	0			
Type of diabetes treatment	Diet control	3	2	0	40.469[a]	6	0.001 HS
	OHA	28	0	9			
	Insulin therapy	9	0	2			
	Both insulin and OHA	40	0	7			
Number of other comorbidities besides	0	19	1	4	1.759[a]	6	0.94 NS
	1	27	1	7			
	2	28	0	6			
	≥3	6	0	1			
Foot ulcer episode	1st episode	29	2	7	6.144[a]	6	0.40 NS
	2nd episode	32	0	4			
	3rd episode	15	0	6			
	More than three-time	4	0	1			
Duration of foot ulcer	≤1 months	8	0	2	6.760[a]	10	0.74 NS
	2–11 months	50	1	14			
	12–21 months	8	0	0			
	22–31 months	8	1	1			
	32–41 months	5	0	1			
	52+ months	1	0	0			
Site of foot ulcer	Forefoot	41	1	7	1.517[a]	4	0.82 NS
	Midfoot	26	1	8			
	Hindfoot	13	0	3			
Wagner wound classification	Grade 0	15	0	3	4.595[a]	10	0.91 NS
	Grade 1	22	1	4			
	Grade 2	13	1	5			
	Grade 3	7	0	1			
	Grade 4	14	0	4			
	Grade 5	9	0	1			
The cause of diabetic foot ulcer	Improperly fitting footwear	12	0	4	7.799[a]	10	0.64 NS
	Injury	35	2	8			
	Burns	5	0	3			
	Spontaneous blisters	3	0	1			
	Fungal infection	16	0	2			
	There is no evidence for the cause	9	0	0			

a: significant at $P \leq 0.05$

are best cleaned with saline since it is physiologic and unaffected by time. In filthy, necrotic wounds, it will not clean effectively. Regarding type of dressing most of the samples were dry gauze. For moderate to heavy exudate, Alginate and foam dressings offer great absorption for it. The best treatments for a diabetic foot ulcer with dying tissue are hydrogels or bandages with collagen and silver. Concerning treatment-related instruction/method most of the samples were restriction of mobility. Regarding history of related operations, most of the s were none. Concerning the question do you take pain relief for your pain most of sample's answers were yes. According to studies, meditation uses neural pathways that make the brain less sensitive to pain and increases use of the brain's own pain-reducing opioids. In contrast to another study, which found that 76.6% of participants had insufficient understanding of how to properly care for their feet (total score under 36), 43.1% of them did not inspect their feet, 67.3% cut their toenails improperly, 60.4% did not wash their feet every day, and 63.8% did not use moisturizing creams. Walking barefoot was observed in 86.2% of cases, as were wearing shoes without socks and without verifying the temperature of the water before a bath in 21.4% and 44.9% as a high risk practicing.[16,17]

Table 6: Relationship between self-care activities of patients with diabetic foot ulcer and some diabetic foot care

Clinical data	Category	Levels			Value	Df	*P* value
		Fair	Good	Poor			
Frequency of dressing change	Daily	62	2	15	1.755[a]	4	0.78 NS
	Twice	13	0	3			
	Other	5	0	0			
Type of cleaning solution	Saline	45	1	10	9.932[a]	4	0.04 NS
	Sterile water	31	0	8			
	Other	4	1	0			
Type of dressing	Dry gauze	63	0	16	28.408[a]	12	0.005 HS
	Foam	3	1	0			
	Saline soaked	2	0	0			
	Antimicrobials	3	0	0			
	Hydrocolloid	6	0	0			
	Gel dressing	2	1	1			
	Other,	1	0	1			
Treatment-related instruction/method	Total contact cast	9	0	1	33.069[a]	18	0.01 S
	Footrest	7	2	0			
	Back slab	4	0	0			
	Orthosis	0	0	1			
	Elevation of limb	8	0	0			
	Sandal	1	0	0			
	Restriction of mobility	22	0	6			
	Insole	16	0	4			
	Non-weight bearing walking with crutches	12	0	6			
	Other,	1	0	0			
History of related operations	None	45	2	7	14.116[a]	14	0.44 NS
	Ray amputation	1	0	2			
	Debridement	1	0	0			
	Forefoot amputation	9	0	3			
	Skin graft	4	0	0			
	Below knee amputation	12	0	2			
	Toe amputation	8	0	3			
	Above knee amputation	0	0	1			
Do you take pain relief for your pain	Yes	66	2	14	0.670[a]	2	0.71 NS
	No	14	0	4			
Does medication relive your pain	Yes	63	2	13	0.940[a]	2	0.62 NS
	No	17	0	5			

a: significant at $P \leq 0.05$

Amputation is requiring in between 0.03% and 1.5% of diabetic foot patients.[18] Good foot hygiene and screening for risk factors for a foot at risk of complications can avoid the majority of ulcers.[19,20]

In regards with the relationship between self-care activities and some demographic & clinical data, the findings indicated that, is a non-significant relationship between the Self-care Activities of Patients with Diabetic Foot Ulcer except with, Occupation, Type of DM, Type of dressing, Treatment-related instruction/method there is a significant at p. value less than 0.05. In another study, the findings indicated that, there was no discernible difference in the percentage of patients who knew about diabetic foot ulcers and had a history of foot ulcers between male and female patients ($P > 0.05$).[10,21]

Also, the model found that four variables were substantially related to foot care index scores: gender, having been taught how to take care of feet, having had feet checked by a physician within the previous year, and receiving support for taking care of feet. Receiving assistance was inversely related to foot care index scores, which means that the support characteristic was related to foot care index scores.[22,23]

Conclusion

Diabetic foot patients' adherence to self-care activities was unsatisfactory. May be due to a lack of education and correct practices about foot care. The patient must assume the responsibility about himself in the first place, as well as hospitals take a greater responsibility to inspire

the self-care activities in caring for themselves. Necessary attention must be paid for the issue, especially at the diabetic foot care centers. Create an educational program to improve patients' self-care activities.

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Conflicts of interest

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