



## A Qualitative Descriptive Cross-Sectional Study to Assess the Development of Stress Among Fujairah Primary Health Care Nurses, and Ways of Coping Up during Covid-19 Pandemic Crisis

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Received: 03 December, 2022, Manuscript no. aeb-22-78949; Editor assigned: 05 December, 2022, Pre QC no. aeb-22-78949 (PQ); Reviewed: 26 December, 2022, QC no. aeb-22-78949 (Q); Revised: 2 January, 2023, Manuscript no. aeb-22-78949 (R); Published: 20 January, 2023

### ABSTRACT

**Aim:** This study aimed to explore perceptions of the most salient sources of stress in the early stages of the coronavirus pandemic in a sample of nurses who were working in Fujairah Primary health care during the year 2020-2021.

**Background:** During the pandemic process, nurses reported experiencing stress due to a very high risk of being infected and workload. The Coronavirus Disease (COVID-19) pandemic has exposed nurses to conditions that threaten their health, well-being, and ability to work. It is therefore critical to study nurses' experiences and well-being during the current crisis to identify risk groups for ill health and potential sources of organizational intervention.

**Method:** A qualitative descriptive cross-sectional study with a sample consisting of 180 nurses working in Fujairah Primary health care centers. To collect data, an online survey questionnaire was formulated which was used together with the Perceived Stress Scale among a sample of 280 nurses who were working in Fujairah Primary health care 2021. Content analysis was conducted on nurses' responses (n=180) for their perceptions.

**Results:** 180 nurses' responses (N) were randomly chosen as samples in this current study of which the majority were female (n=161, 89.4%) and only 10.6% (n=19) were males. Findings revealed the distribution of respondents by stress level either low or moderate. 89.4% of respondents had moderate stress levels as compared to 10.6% with less stress. There is no presence of normal and high stress. There was no significant association between stress when compared to socioeconomic factors like age, gender, marital status, qualification, and job title ( $P > 0.05$ ). But when it compared the relationship between working position and working area, it was showing a significant association ( $P \leq 0.05$ ).

**Conclusion:** Nearly more than half of the nurses in Fujairah primary health care centers perceived stress as the above average during the COVID-19 pandemic, and their working conditions also affected this situation.

**Implications for Nursing Management:** Healthcare institutions should provide opportunities for nurses to discuss the stress they are experiencing, support one another, and make suggestions for workplace adaptations during this pandemic. Meeting physiological needs, and applying psychological guidance and counseling interventions in the stress management of nurses may contribute to the reduction of their stress levels. Effective infection control, reducing workload, increasing the number of nurses, and strengthening the coping mechanisms can minimize the perceived stress level of nurses.

**Keywords:** Nursing, COVID-19, Qualitative, Health workers, Pandemic, Stress, Content analysis

### INTRODUCTION

The COVID-19 pandemic has started to threaten the healthcare systems of countries and has increased the burden on healthcare professionals. Healthcare professionals are the most valuable resource in protecting, preventing, and treating public health in all countries. The services of primary health care, which are one of the units where these basic services are provided, are the place that has important roles in the pandemic process as in other disasters and makes the first intervention for patients affected by the infectious agent [1,2].

As on April 23rd, 2020, more than 2.6 million cases of COVID-19 have been detected globally and the numbers were rising with each passing day. Understandably, a parallel and equally urgent need to strengthen primary healthcare was required. There

are several reasons for this. Primary Health Centers (PHCs) are likely to be the first point of contact for most COVID-19 patients. Experience from China and Italy suggests that of all patients with the disease, 5% -10% become severely ill and require admission to a health facility. About 70% of these patients can be managed with supportive care and oxygen, which PHCs can easily provide. Additionally, on account of their proximity to the communities that they serve, primary health facilities are best suited to educate and inform them about COVID-19. And finally, at a time when there is such restricted access to healthcare due to the lockdown, PHCs ensure access to healthcare for pregnant women, the elderly, children, and high-risk people with conditions such as diabetes, hypertension, etc [3-5].

Disease outbreaks such as the COVID-19 pandemic are stress-provoking situations. Stress is common among healthcare workers especially nurses who are directly involved in managing affected patients during a pandemic. The main source of stress in nurses during the COVID-19 pandemic is fear of becoming infected or unknowingly infecting others. Researchers identified other sources of stress in nurses, including lack of personal protective equipment, fear of access to COVID-19 testing, fear of transmitting the virus at work, doubt that their institution would support them if they become infected, and fear of being deployed in an unfamiliar ward or unit and lack of accurate information on the disease [6-9].

Stress is a universal human experience and is an integral part of the biological structure of any living organism. Stress has both positive and negative effects on people. While a low level of stress is motivating for the person, above-average stress can cause people to be unable to work or cause serious physiological problems [10].

The psychological and physical health of nurses was influenced by many factors. Previous studies reported that personal factors such as gender, age, educational level, marital status, having children or not, and personality might be correlated with mental health among nurses [11,12].

Previous studies carried out during the outbreak of SARS described an increased mental burden on nursing staff. These frontline nurses were reported to have a high risk of psychological distress, such as increased stress level, sleep disturbance, loss of self-confidence, and inability to make decisions, as well as a physical health problems.

## MATERIALS AND METHODS

### **Aim**

This study aimed to explore perceptions of the most salient sources of stress in the early stages of the coronavirus pandemic in a sample of nurses who were working in Fujairah Primary health care during the year 2020-2021.

### **Design**

An online survey study of nurses in Fujairah primary health care centers was conducted in December 2021. The 29-item questionnaire was developed by the research team for the study. It included measures regarding demographic and work-related factors, as well as COVID-19 experiences concerning patient contact, emergency preparedness, personal protective equipment, fear, and mental health and well-being [13]. In addition to the 29 forced-choice items, there was a Google form of 10 questionnaires as another part of our research study to assess the stressful situations dealt with during the COVID-19 pandemic based on a classic stress assessment tool, the Perceived Stress Scale (PSS). In this study, qualitative content analysis was used to examine nurses' responses to this question [14-18].

### **Study Population**

280 nurses working in Fujairah PHC during Covid-19 pandemic crisis.

### **Sample**

Inclusion criteria: Nurses working full time in Fujairah PHC.

Exclusion Criteria: Nursing staff who resigned, terminated, students, newly hired temporary staff, and nurses who were not working full-time basis.

### **Sample size calculation**

The questionnaire was distributed to all the nurses working in primary health care centers of the Fujairah region.

### **Sampling Technique**

Random Sampling of the respondents of questionnaires distributed via online survey and forms was done among the total nurses working in the Fujairah PHC.

### **Study Settings**

The 13 different primary health care clinics located in the Fujairah area of Merashid, Madina, Faseel, Qurayah, Murbah, Qidfa, Bidiyah, Siji, Hala, Wadisader, Tawain, Dadana, and preventive medicine.

### **Duration of study**

The estimated duration was from June 2021 to June 2022.

### Study instruments

An online questionnaire with selected questions to be distributed evenly among all the staff nurses working in Primary health care centers of Fujairah district.

### Plan for a pilot study

No plan for the pilot study.

### Participants

Participants included all the nurses working in the Fujairah PHC Nursing department, who were eligible to participate (approximately 280 nurses). During the survey period, 278 responses were collected. Of these, 180 nurses' responses (N) were randomly chosen as samples that are examined in the current study. The majority of this sample was female (n=161, 89.4%) whereas only 10.6% (n=19) were males. Approximately 70% (n=126) of respondents were between 31 years-40 years of age, 23.9% (n=43) were above 40, and 6.1% (n=11) were between 26-30.

Only 6% (n=12) were unmarried whereas 93.3% (n=168) were married. Of which the majority 87.8% (n=158) had children while only 12.2% (n=22) didn't have children. Just over 3.3% (n=6) have a master's in nursing whereas 54.4% (n=98) are a bachelor's and 41.1% (n=74) of them with a diploma in nursing. The majority of respondents were registered nurses (RNs) (84.5%=70% (nurse) +12.8% (qualified technicians) +1.7% (unit managers)), (n=126+23+3=152), followed by dental assistants (15.6%, n=28). Most worked in a general outpatient setting (68.3%, n=123) with 31.7% where posted in an isolation setting (n=57). 90% (n=162) of participants reported being in contact with COVID-positive patients very often/daily working as front liners while only 10% of them worked as second liners. Nurses whose responses to the survey's question were taken did not differ significantly from non-respondents about age, gender, position, or current stress level ( $p>0.05$  for all variables). However, a significantly larger proportion of question respondents worked as front liners (n=162, 90%) compared to second-line respondents (n=18, 10%) [19].

### Data Collection

Fujairah PHC Nursing department IT distributed surveys directly to the nurse members. Each of the staff was sent an email with a link to the online survey created by DSD with 29 Questions developed by the research team members and a google form to assess the stress level during the COVID-19 pandemic with 10 questions based on a classic stress assessment tool, The Perceived Stress Scale (PSS) [20].

### Data collection technique & Validity

The questionnaire in English and Arabic was prepared by the authors and submitted to the ethical department for validation and thereby distributed. It had two parts:

1. Covering their sociodemographic variables and variables on their working environment, including the attitude of the different categories of working staff, job title, and so on.
2. To assess the stress level with 10 questions as part of our research study to assess the stressful situations dealt with during the COVID-19 pandemic based on a classic stress assessment tool, The Perceived Stress Scale (PSS). A total score of 60, was classified into 0-13: Stress is not a problem in life; 16-30: Moderate stress, which can reasonably be reduced 27-40: Stress is a major problem and something must be done [21-24] (Table 1,2).

**Table 1.** Stress Score Interpretation1: Items and way of scoring the PSS-10-C.

During the last 7 days	Never	Almost Never	Someti mes	Fairly Often	Very Often
Q1. Last year during Covid -19 pandemic, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
Q2. Last year during Covid -19, pandemic how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
Q3. Last year during Covid -19, pandemic how often have you felt nervous and stressed?	0	1	2	3	4
Q4. In the last year during Covid -19 pandemic, how often have you felt confident about your ability to handle your personal problems?	4	3	2	1	0
Q5. Last year during Covid -19 pandemic, how often have you felt that things were going your way?	4	3	2	1	0
Q6. Last year during Covid -19 pandemic, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
Q7. Last year during Covid - 19 pandemic, how often have you been able to control irritations in your life?	4	3	2	1	0
Q8. Last year during Covid -19 pandemic, how often have you felt that you were on top of things?	4	3	2	1	0
Q9. Last year during Covid -19 pandemic, how often have you been angered because of things happened that were outside of your control?	0	1	2	3	4

Q10. Last year during Covid -19 pandemic, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4
Stress score interpretation Total questions=10 0 – Never;1- Almost Never; 2 – Sometimes; 3-Fairly Often; 4- Very Often					

Table 2. Stress Score

S.no	Grade	Score
1	More stress	27-40
2	Moderate stress	14-26
3	Low stress	0-13

Scores: 27-40 will be considered having more stress, from 14-26 as moderate, and 0-13 having less stress.

### Ethical Considerations

Each nurse who participated in the survey questions was by his/her consent and not driven by any external or internal sources. The survey was confidential and anonymous, and the participants could terminate their participation at any time. The study questionnaires were approved by EHS, Data and Statistical Department.

### Data Analysis

The data obtained were analyzed in terms of the objectives of the study using Descriptive and Inferential statistics. A master data sheet was prepared with responses given by the participants with Frequencies and percentages for the analysis of demographic data, the mean and standard deviation of answered questions. The Chi-Square test was used to determine the association between stress level and selected demographic variables presented in tables and graphs [25-30].

The consolidated criteria for reporting qualitative research were followed in the planning and execution of this study to ensure methodological integrity. Qualitative content analysis of the responses was conducted using a data-driven approach.

The Perceived Stress Scale (PSS), a classic stress assessment instrument was used to a framework for structuring qualitative data for analyzing the stress level that is relevant to the research question. Structuring the data in this way helps to create meaning out of complex raw data [31-33].

## RESULTS AND DISCUSSION

### Baseline characteristics of respondents

A total of 280 nurses participated in the online survey, in which 180 responses that were completely answered in the different section were randomly chosen. The results after the analysis of data using SPSS statistical software are contained in this chapter.

The analysis of survey questionnaires revealed as described below in Table 3. Demographic and Socio-economic characteristics of nurses working in Fujairah Primary Health care centers .

The response rates were 10.6% male & 89.4% female 93.3% were married and only 6.7% were unmarried. Among the sample, only 6.1% were between 26 years - 30 years of age while 23.9 % were above 40 years and the majority i.e. 70% of them were between 31 years -40 years of age. In the educational background, professional qualifications revealed that 54.4% were a bachelor's in nursing with almost 41.1% of their diploma and only 3.3% had a master's in nursing with 1.1% of them holding other qualifications. The sample size mainly were staff nurses with registered licenses (70% +12.8%+1.7%=83.5%) working as Qualified technicians or unit managers with only a few 15.6% of them working as dental assistants. The study further revealed that 90% of them were working as front liners while only 10% were on second-line service during the Covid-19 pandemic time. 68.3% of them were working in general units while 31.7% of respondents were working in isolation areas (Figures 1-3).

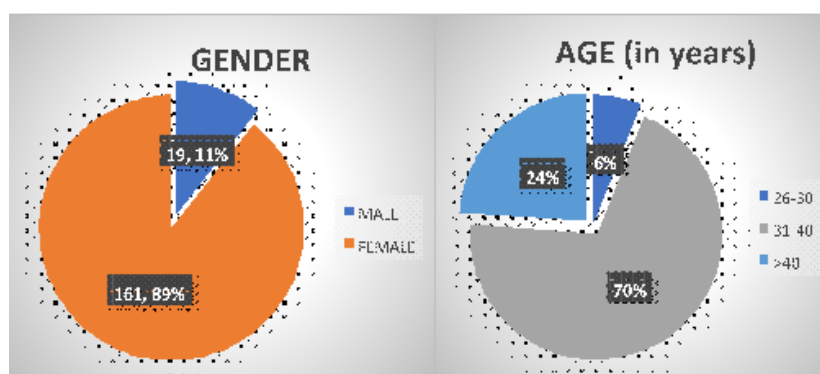


Figure 1. Socio-demographic data based on gender and age

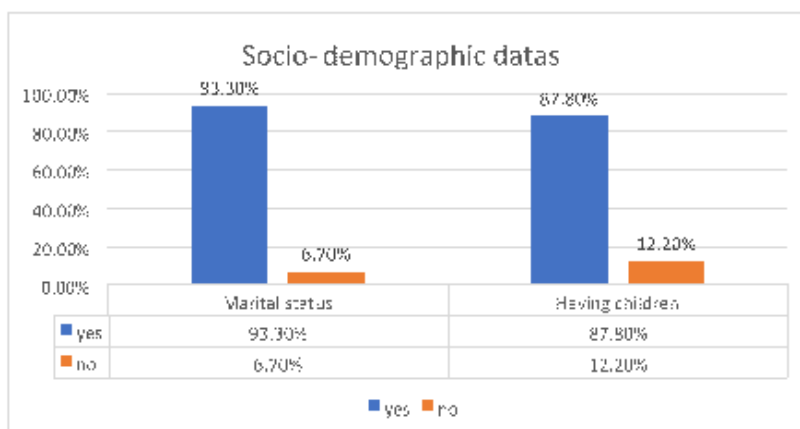


Figure 2. Graphical representation of few socio-demographic data

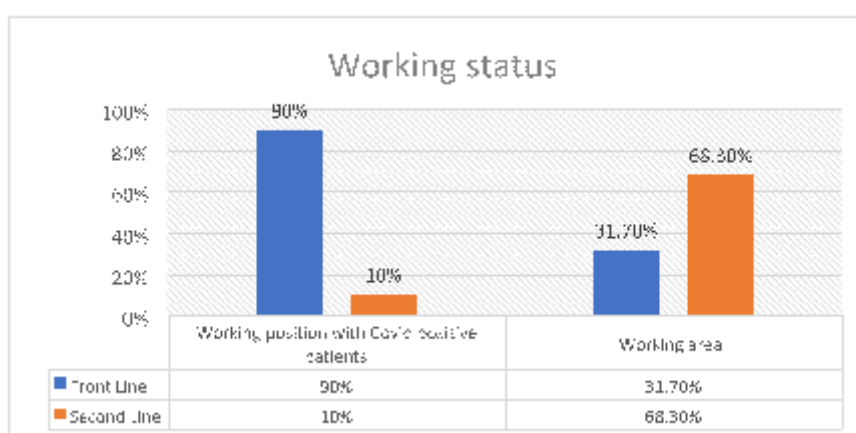


Figure 3. Graphical representation of working status

Table 3. Frequency table of distribution of socio-demographic properties.

Socio-demographic properties			
		Frequency	Percent
Gender	Male	19	10.6
	Female	161	89.4
	Total	180	100
Age	26-30	11	6.1
	31-40	126	70
	>40	43	23.9
	Total	180	100
Marital status	Married	168	93.3
	Unmarried	12	6.7
	Total	180	100
Having children	Yes	158	87.8
	No	22	12.2
	Total	180	100
Educational level	Diploma	74	41.1
	Bachelor in Nursing	98	54.4
	Master's in Nursing	6	3.3
	Other's	2	1.1
	Total	180	100
Job title	Nurse	126	70
	Dental Assistant	28	15.6
	Qualified technician	23	12.8
	Acting Unit Manager	3	1.7
	Total	180	100

Working position with Covid positive patients	Front Line	162	90
	Second Line	18	10
	Total	180	100
Working area	Isolation	57	31.7
	General	123	68.3
	Total	180	100

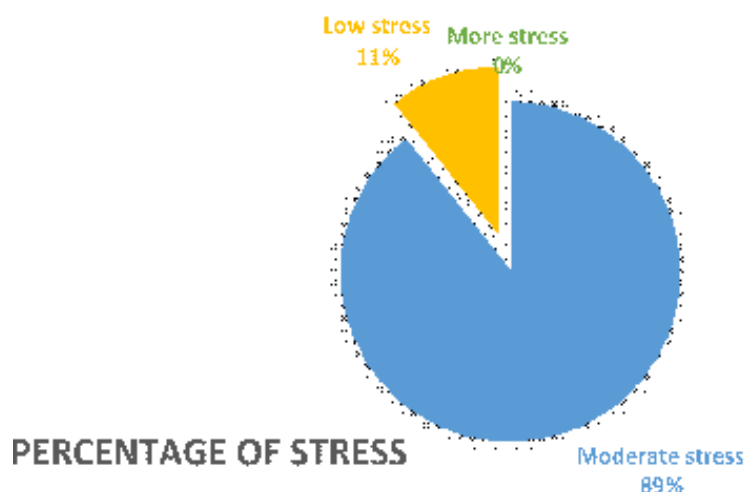
**Assessment of stress among staff nurses in Fujairah PHC**

Overall, our respondents had moderate to low stress with a majority of them 89.4% facing moderate stress towards the effect of the COVID-19 pandemic and only 10.6% facing low stress with respondents showing no presence of more stress (Figure 4).

The below table shows the level of perceived stress scale score and its association with the effect of the COVID-19 pandemic among the nurses working in Fujairah PHC (Table 4).

**Table 4.** Stress Score

S.no	Grade	No.	Percentage
1	More stress	0	0.00%
2	Moderate stress	161	89.40%
3	Low stress	19	10.60%



**Figure 4.** Findings revealed the distribution of respondents by stress level either low and moderate.

89.4% of respondents had moderate stress level as compared to 10.6% with less stress. There is no presence of more stress.

**Nurses’ Perceived stress score during the coronavirus (COVID-19) pandemic and the level of significance for the association between stress on nurses during a covid-19 pandemic**

The table given below shows the level of significance for association between stress on nurses during covid-19 pandemic with selected demographic variables of staff nurses working in the Fujairah PHC. Finding related to association between the occupational stress with their selected socio demographic variables among staff nurses reveal that there is no significant relationship found between occupational stress of staff nurses and sociodemographic variables such as age, gender, marital status, qualification, and job title.

**Table 5.** Frequency of low and moderate perceived stress by variables and associations by chi-square tests

Variable	Low stress n/Frequency (%)	Moderate stress n/ Frequency (%)	Pearson Chi-Square values
<b>Gender</b>			
Male	3 (1.6%)	16(8.9%)	0.616
Female	16 (8.9 %)	145(80.6%)	
<b>Age</b>			
26-30	0	11(6.1%)	-
31-40	12 (6.7%)	114(63.3%)	
>40	7 (3.9%)	36(20%)	
<b>Marital status</b>			
Married	17(9.4%)	151(83.9%)	0.509
Unmarried	2(1.1%)	10(5.6%)	

Having children			
Yes	15 (8.3%)	143(79.4%)	1.544
No	4 (2.2%)	18(10%)	
Educational level			
Diploma	8 (4.4%)	66(36.7%)	-
Bachelor in Nursing	10 (5.6%)	88(48.9%)	
Master's in Nursing	0	6(3.3%)	
Other's	1 (0.6%)	1 (0.6%)	
Job title			
Nurse (RN)	18 (10%)	108(60%)	-
Dental Assistant	0	28(15.6%)	
Qualified technician	1 (0.6%)	22(12.2%)	
Acting Unit Manager	0	3 (1.6%)	
Working position with Covid positive patients			
Front Line	17(9.4%)	145(80.6%)	0.007
Second Line	2(1.1%)	16(8.9%)	
Working area			
Isolation	6(3.3%)	51(28.3%)	0
General	13 (7.2%)	110(61.1%)	

( $P \leq 0.05$ )-significant, ( $P > 0.05$ , not significant)

Pearson Chi square test was applied to find out the association between the stress on staff nurses working in the Fujairah PHC during the coronavirus (COVID-19) pandemic with their socio-demographic variable. In some crosstabs, the Pearson Chi square test were violated accordingly the alternative association called Fisher's Exact Test was applied. There was no significant association between the stress towards when compared to socio-economic factors like age, gender, marital status, qualification, and job title ( $P > 0.05$ ). But when it was related with working position and working area as it was showing a significant association ( $P \leq 0.05$ ).

Hence, it can be interpreted that the level of PSS score related to the demographic variables were only by chance and not true and the null hypothesis is accepted (Table 5).

## IMPLICATIONS FOR NURSING MANAGEMENT

Healthcare institutions should provide opportunities for nurses to discuss the stress they are experiencing, support one another, and make suggestions for workplace adaptations during this pandemic. Meeting physiological needs, and applying psychological guidance and counseling interventions in the stress management of nurses may contribute to the reduction of their stress levels. Effective infection control, reducing workload, increasing the number of nurses, and strengthening the coping mechanisms can minimize the perceived stress level of nurses [34-39].

## LIMITATIONS

While this qualitative analysis sheds light on sources of nurses' experiences of stress early in the pandemic, the study has some limitations. First, participants were limited to nurse members of only one nursing organization which is the primary health care center in a single emirate (Fujairah), and results may not be generalizable to nurses in other PHCs, hospitals, or emirates. Significantly, there are a good number of nurses ( $N = 180$ ) who completely respond to the survey questions working in Fujairah primary health care, compared to nurses who did not respond to the question. Non-respondents may have experienced different work-related factors that may have influenced their perceptions of stress. Nevertheless, the majority of respondents (over 95%) answered, which limits non-response bias. Our study sample was also substantially larger than those of two previous qualitative studies that explored the perceptions of 20 nurses and 13 nurses and physicians in China. As in all qualitative studies, researcher bias may influence findings [21,22]. However, analyses in the current study were validated through another researcher who was not involved in the original coding [40-43].

## CONCLUSION

The results of this study clearly demonstrate that the prevalence of stress, within front-line healthcare workers caring for COVID-19 patients are moderate. Therefore, the healthcare authorities, and decision-makers, nationally and internationally, should take measures to reduce this stress in staff treating the COVID-19 patients. This increases the productivity of the staff, speeds up the measures to control the pandemic, and provides more effective treatment procedures for the COVID-19 patients. Exploration of nurses' perceptions of stress during the pandemic's early phase provides important insight into the nature of nurses' experiences and potential measures that healthcare institutions can take to mitigate nurses' stress. Providing nurses with adequate personal protective equipment is one concrete measure that can help to keep nurses safe and to alleviate their fear of becoming infected. Healthcare units should provide opportunities for nurses to discuss the stress they are experiencing, support one another, and make suggestions for workplace adaptations during this pandemic. Healthcare institutions and nurse managers need to recognize these sources of stress in order to identify potential organizational interventions to maintain nurses' health, safety, and well-being.

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