

Impact of coronavirus disease pandemic on performance and satisfaction, physical activity, and quality of life of the elderly

Elif Gur Kabul^{1*} , Bilge Basakçı Calık² 

SUMMARY

OBJECTIVE: The aim of this study was to examine the effects of the coronavirus disease pandemic in the elderly.

METHODS: A total of 140 elderly with a mean age of 71.30 ± 6.00 years (69 females, 71 males) who spent the coronavirus disease pandemic period at home were included. Canadian Occupational Performance Measure, Visual Analog Scale (for pain intensity at rest and activity), International Physical Activity Questionnaire-Short Form, and EuroQol Five-Dimensional Questionnaire, Three-Level Version Health States were used in the evaluation. Two scores are obtained in Canadian Occupational Performance Measure: one for performance and one for satisfaction. EuroQol Five-Dimensional Questionnaire, Three-Level Version consists of two parts: EuroQol Five-Dimensional Questionnaire, Three-Level Version descriptive system and EuroQol Five-Dimensional Questionnaire, Three-Level Version Visual Analog Scale.

RESULTS: While female gender ($p=0.006$, $p=0.001$), using walking assistant ($p=0.001$, $p=0.001$), being single/widow ($p=0.031$, $p=0.007$), and history of falling ($p=0.004$, $p=0.001$) made difference in Visual Analog Scale (rest, activity), female gender ($p=0.013$) and being single/widow ($p=0.020$) made difference in satisfaction scores of Canadian Occupational Performance Measure. Female gender ($p=0.001$), using walking assistant ($p=0.001$), and history of falling ($p=0.010$) made difference in EuroQol Five-Dimensional Questionnaire, Three-Level Version descriptive system. In addition, performance scores of Canadian Occupational Performance Measure had a low correlation with Visual Analog Scale (rest $r=-0.198$, $p=0.019$; activity $r=-0.188$, $p=0.026$) and had a moderate correlation with EuroQol Five-Dimensional Questionnaire, Three-Level Version descriptive system ($r=0.327$, $p=0.001$) and EuroQol Five-Dimensional Questionnaire, Three-Level Version Visual Analog Scale ($r=0.307$, $p=0.001$). Satisfaction scores of Canadian Occupational Performance Measure had a low correlation with Visual Analog Scale (rest $r=-0.247$, $p=0.003$; activity $r=-0.223$, $p=0.008$) and had a moderate correlation with EuroQol Five-Dimensional Questionnaire, Three-Level Version descriptive system ($r=0.399$, $p=0.001$) and EuroQol Five-Dimensional Questionnaire, Three-Level Version Visual Analog Scale ($r=0.306$, $p=0.001$).

CONCLUSION: The elderly who were women, single/widowed, using walking assistant, and having a history of falling were more affected during the coronavirus disease period.

KEYWORDS: Elderly. COVID-19. Quality of life. Satisfaction.

INTRODUCTION

“Severe acute respiratory syndrome coronavirus type 2 (SARS-CoV-2)” is a newly discovered pathogen in humans, responsible for an infection called coronavirus disease (COVID-19)¹. The COVID-19 pandemic has triggered a worldwide public health crisis, affecting every aspect of life, society, healthcare, and individual health outcomes². The COVID-19 pandemic affects all age groups. However, the effect on the health of the elderly is greater than in other age groups^{3,4}.

All precautions such as physical distancing, movement restriction, and home quarantine during the COVID-19 pandemic led to negative psychological and physical effects, especially for the elderly. Despite all the relief efforts, the elderly had to endure the heavy consequences of the pandemic^{5,6}.

Preventing the elderly from going out can cause social isolation and a decrease in their physical levels⁷. They reduced walking activities, increased sitting, spent more time watching television, and had less social interactions with friends or families⁸. According to studies, the physical effects of the COVID-19 pandemic are sarcopenia, increased risk of falling, fragility, diabetes mellitus, hypertension, and increased risk of cardiovascular disease⁹. Armitage and Nellums reported that insufficient physical activity during the quarantine period may cause harmful effects on the mental and emotional health of the elderly. The psychological consequences of isolation are anxiety, depression, dementia, impaired cognitive functions, mental disorientation, increased suicide attempts, and post-traumatic stress disorder¹⁰.

¹Usak University, Institute of Health Sciences, Physiotherapy and Rehabilitation – Uşak, Turkey.

²Pamukkale University, School of Physical Therapy and Rehabilitation – Denizli, Turkey.

*Corresponding author: elifgur1988@hotmail.com

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Due to the fact that the elderly stay at home and cannot go out, their need for protection, surveillance, and care has increased, and they have experienced more problems in the fulfillment of daily life activities during the COVID-19 pandemic¹¹.

The Health-Related Quality of Life consists of various dimensions such as basic quality of life, well-being, social and psychological factors, physical function, life satisfaction, and awareness of health status¹². The need to explore the health-related quality of life parameters in social isolation, which intensifies during the pandemic period for the already vulnerable elderly, is the focus of the literature reviews and is considered an urgent need¹³. Due to the availability of information about how the elderly self-assess their general condition during the COVID-19 period, this study was planned to examine the effects of the COVID-19 pandemic on performance and satisfaction, physical activity levels, and quality of life in the elderly.

METHODS

Participants

A total of 140 elderly (69 females, 71 males) with a mean age of 71.30 ± 6.00 years who spent the COVID-19 pandemic period at home were included in this study. Inclusion criteria included living at home; 65 years of age and older; being a volunteer; and Hodkinson Mental Test scores of 6 and above. Exclusion criteria included elderly who cannot be contacted for reasons such as Alzheimer's disease, dementia, or psychosis; having a chronic disease that can cause pain; being blind; and having an orthopedic, neurological, or mental disability.

Approval for the study was granted by the Local Ethics Committee (decision no: 19, date: 10.19.2021). All patients were informed verbally, and informed consent forms were signed. All the procedures were in accordance with the ethical standards of the committee responsible for human experimentation and with the Helsinki Declaration of 1975, as revised in 1983.

Evaluations

All evaluations were performed by the same investigator. After the demographic information of the participants (age, gender, marital status, educational level, using walking assistant, and history of falling) was recorded, performance and satisfaction were evaluated with the Canadian Occupational Performance Measure (COPM), pain intensity at rest and activity with Visual Analog Scale (VAS), physical activity levels with International Physical Activity Questionnaire-Short Form (IPAQ-SF), and

quality of life with EuroQol Five-Dimensional Questionnaire, Three-Level Version (EQ-5D-3L) Health States. The interview was face-to-face in approximately 40 minutes. Evaluations were made in the home environment of the elderly, wearing masks and protective clothing to reduce the risk of contamination. Sterilization was achieved with disinfectants.

Canadian Occupational Performance Measure (COPM): The administration of the COPM consisted of five steps. First, they were asked to identify the problematic activities in daily life from three performance areas (self-care, work and productivity, and leisure time). Second, the importance of each problem was graded on a 10-point scale (1 is not important; 10 is very important). Then, the participant selected the five most important problems. Finally, for each of these five most important problems, the participant rated their performance (1=not able to do it at all and 10=able to do it extremely well) and satisfaction (1=not satisfied at all and 10=extremely satisfied) on a 10-point scale. Thus, two scores were obtained: one for performance and one for satisfaction¹⁴.

Visual Analog Scale: The pain intensity of the participant at rest and activity was determined as the length of the distance from "0" to "10" (0="no pain" and 10="worst possible pain"). The mark made by the participant¹⁵.

International Physical Activity Questionnaire-Short Form (IPAQ-SF): It was used to determine the level of physical activity. This questionnaire consisted of seven questions including the "last seven days." A score was obtained by multiplying the minute, day, and MET values¹⁶.

EuroQol Five-Dimensional Questionnaire, Three-Level Version (EQ-5D-3L) Health States: It consisted of two parts: EQ-5D-3L descriptive system and EQ-5D-3L VAS. The score of EQ-5D-3L descriptive system ranged from -0.59 to 1. A value of 1 indicated perfect health, while negative values indicated low quality of life. EQ-5D-3L VAS was numbered from 0 to 100 (0: The worst imaginable health state and 100: The best imaginable health state)¹⁷.

Statistical analysis

As a result of the power analysis performed by assuming that the effect size of the relationship between the variables to be examined will be moderate ($r=0.3$), it was calculated that 80% power could be obtained at the 95% confidence level when a minimum of 64 subjects are included in the study. The data were analyzed using the IBM SPSS Statistics vn.22 software. The Kolmogorov-Smirnov test was used to determine whether the continuous variables were normal distributions. Continuous variables were expressed as mean \pm SD for normal distributions and median (minimum–maximum) for non-normal

distributions. The categorical variables were expressed in numbers and percentages. The Mann-Whitney U test and independent samples test were used to compare the independent group differences. In addition, the relationships between continuous variables were examined with Pearson correlation analysis. Correlation was categorized as low ($r:0.10-0.29$), moderate ($r:0.30-0.49$), or high ($r:0.50-1.00$)¹⁸. A value of $p<0.05$ was accepted as statistically significant.

RESULTS

The study was first involved 160 elderly. The Hodkinson Mental Test score of three elderly was below 6. Two elderly had rheumatoid arthritis. Fifteen elderly did not want to participate in the study. Consequently, the study was completed with a total of 140 elderly (69 females, 71 males) with a mean age of 71.30 ± 6.00 years. The flowchart of the study is shown in Figure 1.

Demographic data and the most challenging activities of the participants are shown in Table 1. Descriptive data by groups are given in Table 2.

Intergroup comparison results

In terms of gender, VAS at rest ($p:0.006$) and activity ($p:0.001$) scores were higher, and EQ-5D-3L descriptive system ($p:0.001$) and satisfaction scores of COPM ($p:0.013$) were lower for female than male (Table 2).

VAS at rest ($p:0.001$) and activity ($p:0.001$) scores were higher, and EQ-5D-3L descriptive system ($p:0.001$) scores were lower for the elderly who used a walking assistant than the elderly who did not (Table 2).

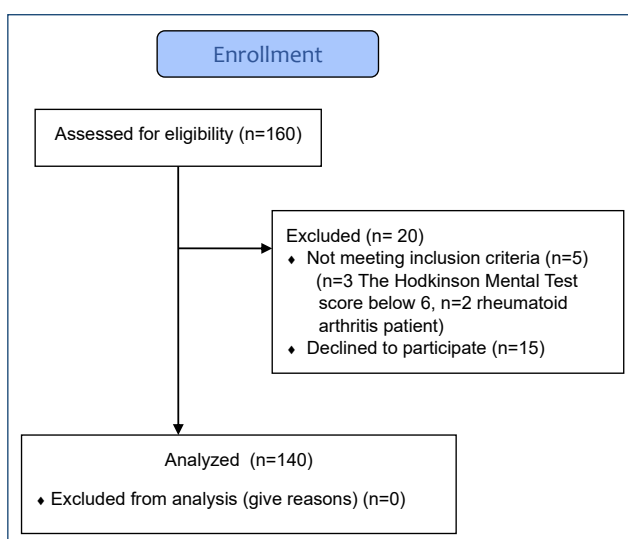


Figure 1. The flowchart of the study.

Table 1. Demographic data and the most challenging activities of the elderly participants according to Canadian Occupational Performance Measure.

| Variables | Mean±SD |
|--|------------|
| Age (years) | 71.30±6.00 |
| Hodkinson Mental Test | 8.59±1.22 |
| | n (%) |
| Gender-female | 69 (49.3) |
| Male | 71 (50.7) |
| Using walking assistant -Yes | 33 (23.6) |
| No | 107 (76.4) |
| Marital status-Married | 105 (75) |
| Single/widow | 35 (25) |
| History of falling-Yes | 47 (33.6) |
| No | 93 (66.4) |
| Educational level-Literate | 26 (18.6) |
| Primary school | 73 (52.1) |
| Secondary school | 23 (16.4) |
| High school | 11 (7.9) |
| University | 7 (5) |
| COPM Self-care activities -Walking outside (park) | 40 (28.6) |
| Up and down stairs | 26 (18.6) |
| Shopping | 23 (16.4) |
| Taking a bath | 21 (15) |
| Take a salary | 19 (13.6) |
| Carrying heavy bags | 16 (11.4) |
| Paying bills | 15 (10.7) |
| Shaving (hair, beard) | 14 (10) |
| Sitting on the toilet | 8 (5.7) |
| Brush hair | 6 (4.3) |
| Cut nail | 5 (3.6) |
| Wear shoe socks | 5 (3.6) |
| Driving a car | 5 (3.6) |
| Get dressed | 4 (2.9) |
| Using technology | 2 (1.4) |
| Get on and off the car | 2 (1.4) |
| Carry tray | 2 (1.4) |
| Work and productivity activities-Cook | 26 (18.6) |
| Home cleaning | 20 (14.3) |
| Taking things from the kitchen cabinet | 10 (7.1) |
| Gardening | 9 (6.4) |
| Laundry hanging/wash the clothes | 4 (2.6) |
| Ironing | 2 (1.4) |
| Sew | 2 (1.4) |
| Leisure time activities-Visiting neighbors, relatives, and friends | 35 (25) |
| Taking care of the grand children | 21 (15) |
| Meeting with friends (such as cafes and coffee shops) | 13 (9.3) |
| Buy a newspaper | 6 (4.3) |
| Travel | 5 (3.6) |
| Go to temple | 2 (1.4) |

Table 2. Descriptive data and intergroup comparison results.

| Variables | Mean±SD Median (min/max) | | | | | | |
|-----------------------------|-----------------------------|---------------------|-------------------------|-----------------------------|--------------|----------------------------|-----------------------------|
| | VAS (Pain)-rest | VAS (Pain)-activity | IPAQ-SF | EQ-5D-3L descriptive system | EQ-5D-3L VAS | Performance scores of COPM | Satisfaction scores of COPM |
| Gender-female | 2.71±2.36 | 5.43±2.25 | 4,389.60±3,347.42 | 0.65±0.27 | 64.19±21.08 | 4.61±1.73 | 3.36±1.71 |
| | 2.5 (0/10) | 5 (0/10) | 4,509 (49.50/16,192) | 0.78 (0.09/1) | 60 (0/100) | 4.60 (1.40/8) | 2.80 (1/7.20) |
| Male | 1.7±1.85 | 3.82±2.64 | 5,539.72±5,176.59 | 0.79±0.26 | 70.31±18.43 | 5.02±2.38 | 4.63±2.77 |
| | 1.5 (0/6) | 4 (0/10) | 4,621.50 (0/29,673) | 0.88 (-0.14/1) | 75 (20/100) | 5 (1/10) | 4.40 (1/12) |
| p | 0.006 | 0.001 | 0.404 | 0.001 | 0.086 | 0.330 | 0.013 |
| Using walking assistant-Yes | 3.45±2.55 | 6.03±2.32 | 4,474.12±2,773.81 | 0.54±0.30 | 61.69±21.26 | 4.35±1.96 | 3.25±1.82 |
| | 3.6 (0/10) | 6 (1/10) | 4,504 (0/10,290) | 0.70 (-0.14/1) | 60 (20/100) | 4 (1.40/8) | 3.10 (1/7) |
| No | 1.81±1.89 | 4.18±2.50 | 5,138.52±4,796.19 | 0.78±0.24 | 69.02±19.30 | 4.96±2.11 | 4.24±2.50 |
| | 1.20 (0/10) | 4 (0/10) | 4,621.50 (49.50/29,673) | 0.88 (0.2/1) | 75 (0/100) | 4.80 (1/10) | 4 (1/12) |
| p | 0.001 | 0.001 | 0.902 | 0.001 | 0.073 | 0.146* | 0.053 |
| Marital status-married | 2.03±2.23 | 4.28±2.67 | 4,912.35±4,812.28 | 0.74±0.27 | 69.10±19.30 | 5±2.18 | 4.31±2.53 |
| | 1.50 (0/10) | 4 (0/10) | 4,032 (0/29,673) | 0.80 (-0.14/1) | 75 (20/100) | 5 (1/10) | 4.20 (1/10) |
| Single/widow | 2.71±1.93 | 5.60±1.98 | 5,204.63±2,978.41 | 0.65±0.29 | 61.88±21.15 | 4.27±1.69 | 3.08±1.63 |
| | 3 (0/6) | 5 (0/9) | 5,517 (82.50/12,864) | 0.70 (0.09/1) | 60 (0/90) | 4 (1.40/8) | 2.80 (1/6.60) |
| p | 0.031 | 0.007 | 0.173 | 0.071 | 0.084 | 0.074* | 0.020 |
| History of falling-Yes | 2.88±2.20 | 5.60±2.30 | 4,575.47±3,866.13 | 0.61±0.32 | 63.14±21.81 | 4.52±1.50 | 3.73±1.74 |
| | 3 (0/10) | 5.6 (0/10) | 4,427 (49.50/16,192) | 0.70 (-0.14/1) | 60 (0/100) | 4.60 (1.4/7.6) | 3.75 (1/7.20) |
| No | 1.85±2.08 | 4.12±2.58 | 5,205.19±4,686.75 | 0.77±0.23 | 69.39±18.71 | 4.97±2.32 | 4.14±2.65 |
| | 1 (0/10) | 4 (0/10) | 4,657.50 (0/29,673) | 0.80 (0.02/1) | 75 (20/100) | 4.80 (1/10) | 3.80 (1/10) |
| p | 0.004 | 0.001 | 0.595 | 0.010 | 0.141 | 0.174* | 0.747 |

Mann-Whitney U test; *Independent samples test; VAS: Visual Analog Scale; COPM: Canadian Occupational Performance Measure, IPAQ-SF: International Physical Activity Questionnaire-Short Form; EQ-5D-3L: EuroQol Five-Dimensional Questionnaire, Three-Level Version Health States. Bold values denote statistical significance at the $p < 0.05$ level.

In terms of marital status, VAS at rest ($p:0.031$) and activity ($p:0.007$) scores were higher, and satisfaction scores of COPM ($p:0.020$) were lower for single/widow than married (Table 2).

VAS at rest ($p:0.004$) and activity ($p:0.001$) scores were higher, and EQ-5D-3L descriptive system ($p:0.010$) scores were lower for elderly with a history of falling than elderly without (Table 2).

There was no difference between groups in IPAQ-SF scores ($p > 0.05$) (Table 2).

Pearson correlation results

Performance and satisfaction scores of COPM had a low negative correlation with VAS at rest and activity and had a moderate positive correlation with EQ-5D-3L descriptive system and EQ-5D-3L VAS ($p < 0.05$) (Table 3).

There was no correlation between COPM and IPAQ-SF scores ($p > 0.05$) (Table 3).

DISCUSSION

The elderly who were women, single/widow, using walking assistant, and history of falling had higher pain intensity in this study. Also, women and single/widow were less satisfied and the quality of life was lower in women, using walking assistant, and history of falling during the period of COVID-19. In addition, performance and satisfaction decreased, while pain intensity at rest and activity increased. As their performance and satisfaction decreased, their quality of life decreased.

Bezerra et al. conducted a study on perceived social isolation during the COVID-19 pandemic in Brazil and

Table 3. The relationship between performance and satisfaction scores of Canadian Occupational Performance Measure with VAS (pain), IPAQ-SF, and EQ-5D-3L.

| | Performance scores of COPM | | Satisfaction scores of COPM | |
|---------------------------------|----------------------------|--------------|-----------------------------|--------------|
| | r | p | r | p |
| Visual Analog Scale (Pain)-rest | -0.198 | 0.019 | -0.247 | 0.003 |
| Activity | -0.188 | 0.026 | -0.223 | 0.008 |
| IPAQ-SF | 0.142 | 0.101 | 0.082 | 0.347 |
| EQ-5D-3L descriptive system | 0.327 | 0.001 | 0.399 | 0.001 |
| EQ-5D-3L Visual Analog Scale | 0.307 | 0.001 | 0.306 | 0.001 |

Pearson correlation analysis; COPM: Canadian Occupational Performance Measure; IPAQ-SF: International Physical Activity Questionnaire-Short Form; EQ-5D-3L: EuroQol Five-Dimensional Questionnaire, Three-Level Version Health States. Bold indicates statistically significant values.

found that social interaction was the most affected aspect¹⁹. Experts say being socially connected is critical to health and survival among the elderly^{13,20}. The consequences of social isolation and emotional loneliness increase their vulnerability to depression, increase their stress level, and reduce their quality of life^{2,21,22}.

Disaggregation of COVID-19 data by age, gender, disability, and underlying health conditions is essential to accurately distinguish risks to the elderly²³. The voices, expertise, and perspectives of elderly people in identifying problems and solutions are sometimes not adequately included in the policy-making process, particularly where elderly people are affected by such decisions. Hence, it is important to expand our partnership to make the voices heard by the elderly, benefit from their knowledge, and ensure their free, active, and meaningful participation²³.

In this study, we examined the perspectives of the elderly, who had to stay at home during the COVID-19 pandemic, on this period and how they evaluated their own situation. We found that the elderly who use a walking assistant and have a history of falling felt more pain intensity and had lower quality of life. With these results, we can say that the elderly who need one or more personal care/partially cannot be self-sufficient are more affected. The elderly who have already withdrawn from social life more than normal individuals may be more affected in terms of psychological influence with more restrictions on their movements. Thus, they may perceive their own situation as worse according to their level of activity. The elderly, who are more dependent on others, may not be able to do their personal care or perform less because they receive less help from their families during this period of restrictions. This situation may even have caused psychological pressure as it may cause further contamination because one of the rules to be considered during the pandemic period was hygiene. Therefore, as a result of our study, the elderly who use a walking assistant and

have a history of falling may have higher pain intensities and lower quality of life.

The elderly living alone are at even greater risk for social isolation, which has significantly increased due to the COVID-19 pandemic. The elderly, especially who live alone and lack support, are among the groups most susceptible to discrimination^{24,25}. In our results, we think that the reason why single/widow elderly have more pain intensity and less satisfaction is that they experience the effects of social isolation more intensely. Inter-American Commission on Human Rights called that “to provide the necessary balance between protection from COVID-19 and the special needs of the elderly to connect with their families, and to provide telephone or internet-based communication channels to prevent their emotional state from being adversely affected²⁶.”

Although the studies in the literature showed that men had higher rates than women in terms of biological exposure (passing the disease with more severe symptoms) and death rates, women are more affected in terms of psychological exposure²⁷. Many studies reported that women are routinely affected more severely in mental health due to biological differences in hormone profiles compared to men²⁸⁻³⁰. As detailed in the policy brief on the impact of COVID-19 on women, elder women often care for elderly relatives and take care of children²³. In our study, we think that the reason for the higher pain intensity and lower satisfaction and quality of life of the elderly women may be because they provide more intensive care during the COVID-19 period and are more affected by the psychological stress caused by this period. Women, who have a longer life expectancy and higher survival rate than men, are particularly highly represented among elderly people in the 80+ age group, and this has important implications for health policies²⁷.

When the average values of the physical activity levels of our sample group are examined, it is seen that they are similar. We attribute this reason why no significant difference was

observed in IPAQ-SF scores in correlation and intergroup comparisons. Physical activity provides benefits for the health of the elderly by stimulating muscle contraction and energy expenditure and reducing systemic inflammation, oxidative stress, and the prevalence of chronic diseases. The risk of functional decline is higher in older people who do not participate in regular physical activity. Physical activity is especially important for older people to maintain their level of independence, mental health, and well-being³¹. Therefore, we recommend that they can be encouraged to maintain mobility in old age.

In this study, we observed that the most challenging activities of the elderly evaluated with COPM were “self-care activities.” “Walking outside” is the most challenging activity. This is followed by “visiting neighbors, relatives, and friends.” This shows how much elderly individuals are affected by social isolation. Among the most challenging activities, “shopping, take a salary, and taking care of the grand children” are the activities that attract attention.

Important conclusions can be drawn from this acquired pandemic. Based on the results we obtained from this study, we think that more focus should be placed on social support for the elderly who are women, single/widow, use a walking assistant, and have a history of falls, and special methods should be developed with multidisciplinary studies in order to better

manage both the physical and psychological conditions of these people within the scope of observing the rights of the elderly while making difficult decisions regarding health.

Due to the lack of a regular source of income and insufficient savings during the COVID-19 period, many individuals are facing financial crises¹⁹. One of the limitations of our study is that data on the source of income and its effects were not collected.

CONCLUSION

In the elderly population, female gender, using walking assistant, being single/widow, and history of falling were more affected in terms of pain intensity, satisfaction, and quality of life during the COVID-19 period. Performance and satisfaction scores of COPM had a correlation with pain intensity and quality of life.

AUTHORS' CONTRIBUTIONS

BBC: Conceptualization, Methodology, Project administration, Supervision, Writing – review & editing. **EGK:** Data curation, Formal Analysis, Investigation, Resources, Software, Validation, Visualization, Writing – original draft.

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