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Health-related Quality of Life of Cured Patients of the Covid-19 after Discharge from Hospital

Hadi Hayati[1,2] *, Razieh Askari Zahabi [3], Reza Askari Zahabi [4]

1. *Assistant Professor, Razi Herbal Medicines Research Center, Lorestan University of Medical Sciences, Khorramabad, Iran.*
2. *Assistant Professor, Department of Pharmacoeconomics and Management, School of Pharmacy, Lorestan University of Medical Sciences, Khorramabad, Iran.*

* ***Corresponding Author:*** Email: Hadihayati88@gmail.com

3. *Optometrist, Department of Optometry, School of Rehabilitation Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran.*
4. *Student of Radiation therapy, Department of Radiation therapy, School of Paramedicine and Radiation therapy, Arak University of Medical Sciences, Khorramabad, Iran.*

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ABSTRACT

Background: Examining the results of the treatment of patients after discharge from the hospital is an essential question in measuring the effectiveness of the treatment of COVID-19 for health systems. Therefore, this study aims to investigate the Quality of Life of cured patients with covid-19 using the well-known EQ-5D scale.

Methods: A systematic search was conducted in available databases including PubMed, Scopus, Web of Science, and EMBASE from the beginning of January 2019 to the beginning of July 2022. After three screening stages, studies related to the quality of life of COVID-19 survivors were included.

Results: Data were categorized and extracted based on the five dimensions of the EQ-5D questionnaire. Finally, the analysis of the results of the studies indicated that the utility score was above 70% so, in more than half of them, the most complaint among the questionnaire dimensions was related to disruption in usual activities and self-care. Next, mobility and pain had the most significant impact on reducing the quality of life of recovered patients. The most minor complaints of the discharged patients were related to anxiety/depression.

Conclusion: Considering that the symptoms of the disease are present in the cured patients, it is necessary to follow up on these symptoms to prevent them from getting worse by simple and essential actions. So, an organized follow-up structure in health centers is fundamental to improving the quality of life for the survivors of COVID-19.

Keywords: Quality of Life, Utility, Cured, Discharged patients, COVID-19, EQ-5D, QALY,

Introduction

In December 2019, the increasing coronavirus outbreak, which started in China, gradually covered the whole world and many countries in different continents, significantly affecting people's health and other social and economic factors worldwide [1,2]. At first, countries used different strategies to control the disease, and gradually, as the disease became better known, different treatment methods were used for patients. Today, with the increase in the cured patients, the most critical issue is the effects of treatment and long-term complications of the disease on people's lives [3, 5]. This disease has shown remarkable effects on global health; in addition to its short-term symptoms and effects on people's health, it also has long-term effects on people. These long-term complications can adversely affect recovered patients' physical and psychological performance [6, 7]. Long-term health disorders are often experienced among survivors, which may negatively impact their quality of life [8, 9].

On the other hand, in recent years, various tools have been used to calculate health-related quality of life in various research worldwide [10, 11]. Preliminary investigations showed that the EQ-5D tool had been most used in calculating the quality of life of COVID patients. This tool has a scale between zero and one for measuring QALY and desirability. The number zero indicates the state of death and severe disability, and the number one indicates perfect health and recovery [12, 13]. This questionnaire, which the European Quality of Life Organization presented, has investigated the assessment of healthy and sick people in different countries about their health status and includes five dimensions of motion, self-care, usual activities, pain/discomfort, and anxiety/depression and a scale of visual comparisons[14]Therefore, we decided to investigate the health-related quality of life of people who have recovered from COVID-19 after being discharged from hospitals around the world.

Material and Methods

This study is a structured review that aims to investigate the quality of life of patients who have recovered from COVID-19 using the EQ-5D tool in studies conducted from the beginning of January 2019 to the beginning of July 2022 with English keywords:

#1: “COVID-19” OR “Coronavirus” OR “SARS-Cov-2”

#2: "Utility" OR "quality of life" OR "QALY."

#3: "EQ5D"

#4: "survivals" OR "discharge."

As shown in **Table 1**, in the databases:

PubMed, Scopus, Web of Science, and EMBASE

Inclusion criteria: The study inclusion criteria included original descriptive studies in patients who were discharged and improved at the end of treatment, and their quality of life was measured by the EQ5D method.

Exclusion criteria: The Research exclusion criteria also include all articles with case-control, review, and qualitative methodology and conference articles, letters to the editor, etc. were published during the pandemic period.

Data extraction: To check the quality of the selected final articles, two researchers separately checked their quality based on the checklist (Joanna Briggs Institute Critical) of Joanna Briggs Institute [15]. According to the score of each question based on the checklist, finally, with a score higher than 50% of the total score, the selected good-quality articles were included in the study.

Data analysis: According to the research inclusion criteria, studies aligned with the research objectives were extracted. The general information of the studies, including the study location and year, sample size, duration after discharge, and other descriptive characteristics, were extracted. It is shown in Table 2 that the score of the five principal dimensions of the questionnaire, which include motion, self-care, usual activities, pain, and anxiety, were extracted in different studies.

Results

The review and evaluation of the studies were done by two researchers separately. The process of selecting the studies is shown in Figure 1. Considering that the subject of the study (covid-19) is relatively new and was entered into the information sources in the last two years, therefore, in the initial search, 48 articles were found in the mentioned databases. After that, through three screening stages, including removing repetitive and unordered articles, Examining the Title and abstract, and reading the full text of the articles. Finally, five articles met the inclusion criteria. The data were extracted based on the quality-of-life dimensions of the questionnaire. Although high accuracy was taken in the selection and extraction of studies and led to the selection of a limited number of studies, the final articles had a high correlation and consistency.

As the data in Table 1 shows, in all studies except one study, the number of recovered men patients was more than women, and also in these studies, the age average of sick people was often reported to be more than 50 years. Also, most respondents were evaluated and questioned 3 to 6 months after discharge. In all

studies, due to the nature of the disease and its contagiousness, interviews were conducted online or by telephone with survivors and recoveries.

As the results of Table 1 show, most studies report a desirability score above 70%, which indicates an acceptable quality of life among those discharged. Also, in more than half of the studies, the most complaints among the dimensions of the questionnaire are related to disruption in usual activities and self-care [8, 17-19]. Pain and movement scored highest in the following order [16]. It shows the most significant impact in reducing the score of the quality of life of those who have recovered. The anxiety/depression dimension had the lowest score; that is, it had minor complaints from the recovered patients, which indicates the most negligible impact on the desirability score and quality of life of the discharged patients. The visual analog score was also reported above 70% in most studies, which indicates a promising trend in the recovery of patients, and this score is in line with the overall desirability score, which is between zero and one, and was reported above 70% in most studies [8, 19, 17, 20]

Discussion

As the results of various studies show, many patients had some complications after recovering and being discharged from the hospital in the short and long term. In some studies, about 10% of the survivors could not return to their previous work due to their poor condition, which decreased their quality-of-life score, and about 70% of patients reported stable symptoms six months after discharge [17]. Six months after the illness, death, and new disability were significant. More than one-third of survivors had a new disability that was widespread across all functional domains [17]. The most reported problems were pain/discomfort and anxiety/depression, which increased significantly with age, chronic illness, lower income, epidemic effects, and worry about getting infected [16]. Elderly patients and people hospitalized for more than 15 days had lower desirability scores than similar people, so this disease significantly affected the quality of life of older adults, especially those with underlying diseases [20]. Therefore, this study's and similar studies' results indicate the critical role of age and underlying disease in preventing disease complications even after discharge and recovery. Mobility, pain/discomfort, and anxiety/depression were the main problems that persisted one to three months after hospital discharge, based on outcomes reported by post-illness COVID-19 survivors. [8] The survivors of COVID-19 often complained about the continuous and lasting effects of this disease on the body and mind and its social aspects on their health and their families. Long-term impairment in physical, cognitive, and mental health after a critical illness is often experienced by survivors and their families [18]. Fatigue caused by the disease was reported as the most common symptom in about two-thirds of the patients. Subsequent symptoms such as shortness of breath and mental distress were also present in more than half of the patients, and these caused a significant decrease in the quality of life of the patients [19]. It seems that the leading cause of such complications is the initial severity of the disease during the period of suffering from it. As clinical follow-up studies of COVID-19 patients reported, initial disease severity is a primary risk factor for reduced quality of life in survivors of the disease. Moderate or severe disability six months after the disease crisis is present in 25% of survivors and is associated with reduced health-related quality of life [18]. In general, the lack of timely follow-up of the symptoms of the disease causes the disease to reappear. The patients return to the hospitals, a significant factor in increasing the costs of treating patients in the health system. Hence, preventing patients from re-infection or worsening its complications is an essential strategy for reducing Costs, and cost analysis studies of disease treatment indicate this issue [21].

Conclusions

COVID-19 significantly impaired patients' quality of life, especially among elderly patients with underlying diseases. Therefore, clinical follow-up and psychological treatment should be encouraged for these groups. Considering that the symptoms of the disease are present even after discharge and recovery patients therefore, it is necessary to follow up on these symptoms in order to be able to prevent their condition from worsening with simple and essential measures to accelerate the faster return to health. So, an organized follow-up structure and organization from the health centers and the health system is essential to improve the health-related quality of life in the survivors of COVID-19.

Abbreviations

EQ-5D: Euro Quality-5Dimentions: an instrument for measuring quality of life

QALY: Quality-adjusted life year; QALY scores range from 1 (perfect health) to 0 (dead).

Ethical Considerations
All ethical considerations were taken into account.

Consent for publication
Not applicable.

Availability of data and materials
Due to the fact that the study is a review, all information and articles have been referenced

Conflict of Interest
No conflict of interest was reported.

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Authors' contributions
H. H: Study design, search, review of articles, analysis, writing of manuscript. R.A.Z1: search, review of articles. R.A. Z2: review of articles, analysis, writing of manuscript, editing

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Tables

Table 1. Search strategy

Database	Search strategy	N
PubMed	(((((COVID-19[Title]) OR (Coronavirus [Title])) OR (SARS-Cov-2[Title])) AND (((Utility [Title]) OR (quality of life [Title])) OR (QALY[Title]))) AND ((survivals [Title]) OR (discharge [Title]))) AND (EQ5D[Title])	11
Scopus	(((TITLE (COVID-19)) OR (TITLE (Coronavirus)) OR (SARS-Cov-2)) AND (TITLE (Utility)) OR (TITLE (quality of life))) OR (TITLE (QALY)) AND (TITLE (EQ5D)))	13
Embase	((("COVID-19": ti OR "Coronavirus": ti OR "SARS-Cov-2": ti) AND ("Utility": ti OR "quality of life": ti OR "QALY": ti) AND ("survivals": ti OR "Coronavirus":ti "discharge") AND ("EQ5D":ti)))	16
Web of science	TI= (("COVID-19" OR " Coronavirus " OR " SARS-Cov-2")AND (" Utility " OR " quality of life " OR " QALY ") AND ("survivals " OR " discharge ") AND ("EQ5D "))	8

Table 2. Characteristics of selected studies

	Author /year	Country	Sample size	Method	Time period	Gender (%)	Age
1	Weiwei Ping:2020 [16]	China	1139	Online social media	End of treatment	MALE (40.4) FEMALE (59.6)	38.3
2	Joana FERNANDES: 2020 [8]	Portugal	45	Phone	30 and 90 Days	MALE (62) FEMALE (38.5)	63
3	Carol L. Hodgsonl: 2021[17]	Australia	212	Phone	6 months	MALE (58.5) FEMALE (41.5)	61
4	Rubina Shah:2021 [18]	UK	735	Online	12 weeks	MALE (23.4) FEMALE (76.6)	44.7
5	Stephen J. Halpin:2020 [19]	UK	Ward: 68 ICU: 32	Phone	48 days	WARD MALE (51.5) FEMALE (48.5) ICU MALE (59.4) FEMALE (6.4)	Ward =70 ICU = 58

Table 3. Scores of different dimensions of quality of life in selected studies

STUDY		Utility score		VAS score	motion	self-care	usual activities	pain/ discomfort	Anxiety/ depression
1	Weiwei Ping	The most reported problem	0.94 0.10	85.52 19.37	3.9	1.1	1.9	19.0 **	17.6
2	Joana FERNANDES	Basic (moderate to severe problems)	-	75.0	15.6%	15.6 %	51.1% **	31.1%	37.8%
		After 30 to 44 days	-	-	15.4	23.1	61.5 **	30.8	38.5
		After 45 to 90 days	-	-	12.5	9.4	46.9 **	31.3	37.5
3	Carol L. Hodgson1-aust	basis (no problem)	1	86.5	80.7	96.5 **	93.8	71.7	79.6
		6 months later	0.8	70.0	57.3	84.3 **	55.7	50.4	60.0
4	Rubina Shah	B without problem Some problems Severe problems	8.65 (1.97)	55.83 (22.94)	43.8 53.9 2.3	77.6 21.5 1.0	20.5 53.2 26.3 **	18.9 68.7 12.4	31.3 53.3 15.4
5	Stephen J. Halpin-	Ward	0.724	-	30.9	17.6	36.8 **	14.7	16.2
		ICU	0.693	-	50 **	12.5	29.4	28.1	37.5

Figure

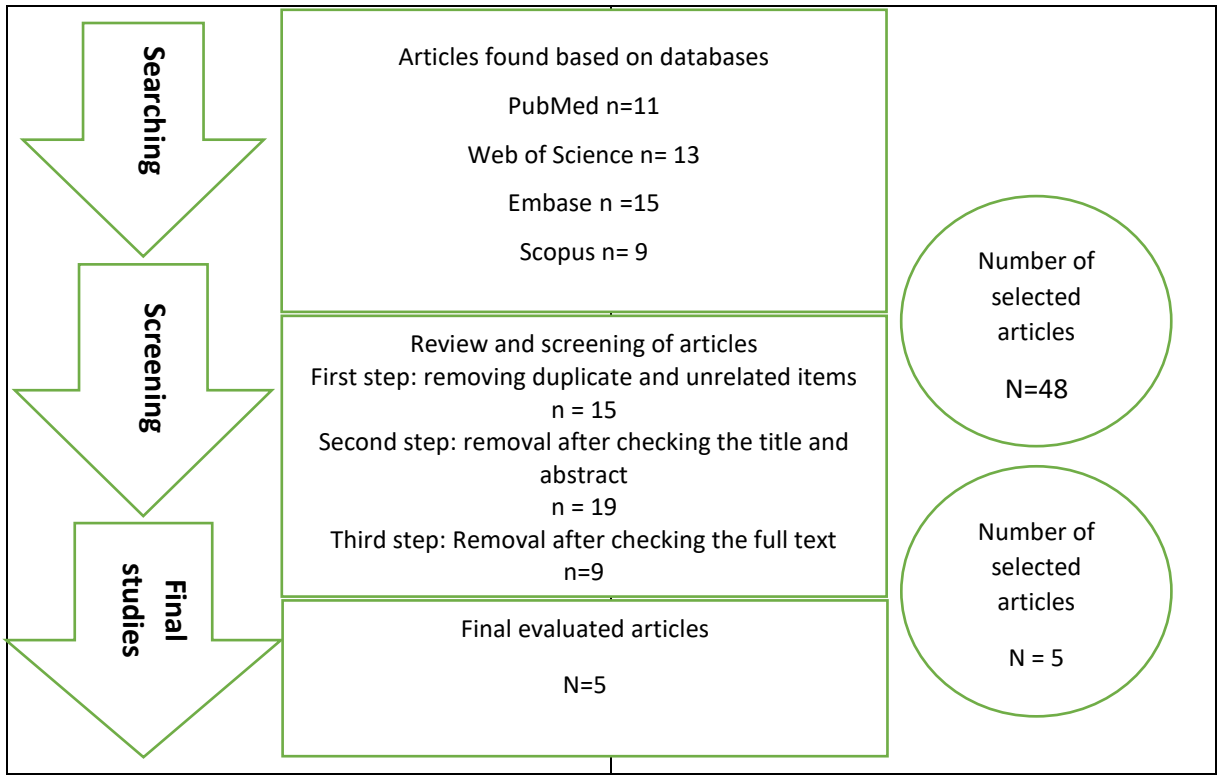

Figure 1. Flowchart of study selection process

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