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Post-intensive care syndrome in patients recovered from COVID-19 discharged from intensive care at a third level of care

Abstract

Introduction: The post-Intensive Care Syndrome (PICS) was coined in 2020, survivors experience cognitive, psychological, and physical impairment; unknown effects due to not following up with patients discharged from an Intensive Care Unit (ICU).

Objective: To calculate the prevalence of PICS in patients recovered from COVID-19 discharged from the ICU from a third level of care.

Material and methods: Ambispective, cross-sectional, observational, and analytical study. The prevalence of PICS was calculated in patients discharged from the ICU who recovered from COVID-19 and who met inclusion criteria, the descriptive analysis of the population was performed, and the sample was divided into two groups to compare them.

Results: A total of 126 patients were included, 53.2% male, with a mean age of 52 years. BMI >25 was the most frequent comorbidity in 76.2%, followed by DM in 39.7%, SAH in 26.2%, the degree of dependence measured by the Barthel scale was mild in 27%, with 24 patients p 0.041 occasionally being dependent for urination, 38 patients p 0.034 to move with help and 36 patients with p .009 to climb stairs with help with a prevalence of PICS of 14.3%. **Conclusion:** The prevalence of PICS in patients recovered from COVID-19 was 14.3% and its main comorbidities were BMI >25, followed by DM2 and SAH.

Keywords: Physical deterioration, Post intensive care unit syndrome, COVID-19

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Introduction

Studies over the last few decades on mortality in the Intensive Care Unit (ICU) have allowed a relative decrease in mortality by 35% between 1988 and 2012,[1] attributed to the involvement of specialists trained in intensive care.[1,2] These advances have resulted in a growing population of survivors of serious illness.

The first time that mentions was made of the results after discharge and follow-up of patients was in a publication in 1976 through the *New England Journal of Medicine* (NEJM). In this paper, entitled *"Survival, hospitalization charges and follow-up results in critically ill patients,"* conducted by Harvard Medical School, 226 patients in the intensive care unit were followed during the period 1972-1973; 27% survived the first year. The follow-up was at 3, 6, and 12 months, through visits to the hospital, telephone consultation, or mail, they questioned mainly about aspects related to the mental state, functional capacity, and current stay of the patient, 42% of the patients questioned recovered their functional capacity and 16% were in the health care home. They also found that age over 65 years hurt survival to the first year.

In post-intensive care syndrome (PICS), survivors experience impairment in cognition, mental status, and physical function; effects that have not been studied, since patients were not followed up after discharge from the ICU, known as post-intensive care syndrome (PCIS).[3] There is no official definition for PICS, so it refers to a set of alterations that arise after a critical illness and that persist beyond discharge from the ICU. These alterations can be at the level of cognitive, psychiatric, and physical function.[4]

This term is also used to encompass the effects of critical illness on acute and chronic psychological morbidity among family members. It is known as acute care family syndrome (PICS-F).[4,5] High rates of depressive symptoms and PTSD have been reported in survivors of critical illnesses in up to 28% of patients. In the surviving patients of the BRAIN-ICU study (17) 37% of patients experienced symptoms of depression.[6] It has been observed that depressive symptoms can remain in up to 10% of patients up to 12 months after hospitalization.[7]

According to needs, 32% of patients in the BRAIN-ICU study were disabled in their activities of daily living at three months, and 26% were disabled in instrumental activities of daily living. Disability was prominent in those with and without pre-existing dysfunctions and these disabilities persisted in most patients at 12 months.[6,8] The risk factors that have been described in the PICS can be classified as pre-existing and specific factors of the ICU, within the pre-existing risk factors we can mention for example: neuromuscular disorders, previous cognitive impairment, psychiatric illness, and frailty syndrome.

Sociodemographic factors include age, sex, ethnicity, marital status, socioeconomic status, education level, social support, alcohol habits, and smoking. Factors related to personality are: perception of illness, optimism, and anxiety disorder.

In terms of previous health, the following can be listed: body mass index, hearing impairment, visual impairment, previous admission to the ICU, previous sleep quality, previous physical condition, and spiritual health; socioeconomic level. Among the factors related to admission to the ICU, the following stand out: emergency admission, type of hospital, medical or surgical patient, length of stay in ICU, and length of stay in hospital.

Factors related to ICU management include: type of diagnosis, previous comorbidities, surgery, complications, and severity of the disease. Hemodynamic and cardiovascular support, respiratory support such as mechanical ventilation and days of mechanical ventilation; renal support, number of failures added in their hospitalization in ICU, use of muscle relaxants, sedatives, and other drugs (for example: steroids). Those related to the patient experience: presence of delirium, ICU perspective, bed rest, pain management, and ICU experience.[9]

Although there is no official definition and therefore a high diagnostic suspicion and the identification of symptoms through validated scales are required, it has been proposed to evaluate the presentation of PICS through different categories.[10]

The Barthel index omit or also known as the Maryland disability index is one of the instruments used for the assessment of physical function, it is a generic measure that assesses the level of independence of the patient concerning the performance of some basic activities of daily living, this began to be used in the hospitals of the chronically ill of Maryland in 1955 with the main objective of evaluating functional capacity of those patients with neuromuscular and musculoskeletal disorders. This index is widely used for the evaluation of functionality; however, it is based on empirical bases and gives a value from 5 to 15 according to the degree of disability, taking the value of 100 as a complete degree of independence.[11-15]

Materials and methods

An ambispective, cross-sectional, observational, and descriptive study was carried out in the Intensive Care Unit of a third level of care (UMAE Hospital de Especialidades "Dr. Antonio Fraga Mouret", of the La Raza National Medical Center), from 2020 to 2021 where 126 critical patients discharged from the intensive care unit were included, those patients with a positive PCR test for SARS COV2 were included, who have been admitted and discharged from ICU and male and female patients over 18 years of age.

Data were collected by telephone using a collection instrument where data were obtained from the file and complemented by obtaining data by telephone as follows: age, sex, marital status, weight, height, BMI, type 2 diabetes mellitus, complications of type 2 DM, history of arterial disease, history of cerebral vascular event, dementia during hospitalization, history of epilepsy, systemic arterial hypertension, dyslipidemia, heart failure, ischemic heart disease, chronic kidney disease, liver failure, liver cirrhosis, SLE, HIV, COPD, leukemia, gastric ulcer, the type of patient whether it was admission to the ICU for surgical reasons or not, APACHE II and SOFA at the time of admission to the ICU, consumption of any substance, requirement for mechanical ventilation, hemodialysis or other organic support, sedation, days under sedation, neuromuscular blockade, steroid use during hospitalization, delirium, death, the Barthel scale was questioned in terms of the patient's functionality when feeding, washing, dressing, grooming, bowel movements, urinating, using the bathroom, moving, walking and climbing stairs. Based on the Barthel scale, it was classified in as a degree of dependence.

Statistical analysis

Nominal and/or categorical variables were expressed with frequencies and percentages, and continuous variables were expressed as mean ± standard deviation for data with normal distribution and as medians with interquartile range (IQR) for those with free distribution.

The normality of the quantitative data was determined by the Kolmogorov-Smirnov test, and the point prevalence of PICS was calculated with the formula: P= C/N, in C= cases that developed PICS and N= population studied. The sample was divided into two groups, with and without PICS development, the comparison between the groups for quantitative variables was made using Student's T or Mann's Whitney's U according to their distribution; the comparison of categorical variables was carried out using Chi2 or Fisher's Exact. The association of the different potential risk factors and the occurrence or not of PICS was determined, and a univariate and multivariate logistic regression analysis was performed where the variables that were included in the bivariate analysis had a value of $p \leq 0.20$ or clinical relevance to the event.

Results

A total of 126 patients were included, of which the sociodemographic characteristics were: mean age 52.1 + 15.2, male gender was 67 people (53.2%), female 59 people (46.8%), mean height 1.65 cm +0.67, mean weight 70.7 kg +10; BMI frequency normal weight 26 patients (20.6%), overweight 96 patients (76.2%), marital status was found to be single in 26 patients (20.6%), married 96 (76.2%), the median of SOFA was 4 (IQR 2-8), the median of APACHE II 11 (IQR 5-15) (Table 1).

The frequency of comorbidities was for DM 50 (39.7%), complications due to DM 36 patients (28.6%), systemic arterial hypertension 33 (26.2%), dyslipidemia 30 (23.8%), chronic renal failure, Grade 1, 2 (1.6%), Grade 2, 2 (1.6%), Grade 3, 12 (9.5%), Grade 4, 1 (.8); heart failure 2 (1.6%), ischemic heart disease 7 (5.6%), dementia 1 (.8). Cerebrovascular disease 0, Epilepsy 0, Hepatic Failure 0, systemic lupus erythematosus 6 (4.8%), human immunodeficiency virus 4 (3.2%), COPD 6 (4.8%), Leukemia 0, Gastric Ulcer 1 (.8%).

The prevalence of functionality in patients with PICS post-intensive care syndrome was divided according to the items of the Barthel scale of independence functionality into activities of daily living: feeding, washing, dressing, grooming, bowel movements, urination, using the bathroom, moving, ambulating, climbing stairs and the degree of dependence, which was independent 74 (58.7%). mild 34 (27%), however, the prevalence of PICS according to the scale was moderate 14 (11.1%), and total dependent 4 (3.2%), that is, the prevalence of PICS in patients recovered from COVID at discharge from the ICU was 14.3% (Table 2). An analysis was carried out to show differences between the general population and the groups, being an independent group with an n 74 (58.6%), a mild dependent group with n 34 (26.9%), a moderate dependent group with n 14 (11.1%); however, there were no patients in the severe group, so finally, the total dependent group with an n 4 (3.1%) is omitted.

Table 1 Sociodemographic and general characteristics of the population

	n=126
Age, mean (SD), years	52.1 (15.2)
Gender, M (%)	67 (53.2)
F	59 (46.8)
BMI, n (%)	
Normal	26 (20.6)
Overweight	96 (76.2)
Grade I	2 (1.6)
Grade II	0
Grade III	2 (1.6)
Size, Medium (SD)	1.65 (.068)
Weight, Mean (SD)	70.7 (10)
SOFA, median (RIC)	4.0 (2-8)
APACHE II, median (RIC)	11 (5-15)
Civil status, n (%)	
Bachelor	26 (20.6)
Married	96 (76.2)
Common-law marriage	2 (1.6)
Divorced	0
Widower	2 (1.6)
Type of patient, n (%)	
Medical	118 (93.7)
Surgical	8 (6.3)
Substance use, n (%)	
Tobacco	46 (36.5)
No	51 (40.5)
Alcohol and tobacco	29 (23)
Organic support, n (%)	
Mechanical Ventilation (MV)	70 (55.6)
Intermittent hemodialysis (IHD)	1 (.8)
None	44 (34.9)
MV and IHD	11 (8.7)
Sedation, n (%)	
Midazolam	8 (6.3)
Propofol	4 (3.2)
Dexmedetomidine	5 (4.0)
Diazepam	4 (3.2)
Other	36 (28.6)
None	49 (38.9)
Midazolam/Propofol	16 (12.7)
Dexmedetomidine/Propofol	4 (3.2)
Days Under Sedation, Median (IQR)	9 (0-13)
Neuromuscular blockade, n (%)	
Yes	42 (33.3)
No	72 (57.1)
Infusion	12 (9.5)
Steroids, n (%)	64 (50.8)
Delirium, n (%)	40 (31.7)
PICS, n (%)	14.3

Abbreviations: M, male; F, female; RIC, interquartile range; SD, standard deviation; BMI, body mass index; PICS, post-intensive care syndrome.

Table 2 Prevalence of functionality in patients with post-intensive care syndrome

	n=126
Food, n (%)	
Independent 10	78 (61.9)
Help 5	48 (38.1)
Dependent 0	0
Wash, n (%)	
Independent	100 (79.4)
Dependent	26 (20.6)
Dress, n (%)	
Independent	98 (77.8)
Help	24 (19)
Dependent	4 (3.2)
Fix yourself, n (%)	
Independent	100 (79.4)
Dependent	22 (17.5)
Stools, n (%)	
Continent 10	98 (77.8)
Occasionally incontinent 5	24 (19)
Incontinent 0	4 (3.2)
Urination, n (%)	
Continent 10	98 (77.8)
Occasionally incontinent 5	24 (19)
Incontinent 0	4 (3.2)
Usar Bai, N (%)	
Independent 10	98 (77.8)
Help 5	24 (19)
Dependent 0	4 (3.2)
Move, n (%)	
Independent 15	82 (65.1)
Minimum help 10	38 (30.2)
Big Help 5	2 (1.6)
Dependent 0	4 (3.2)
Wander, n (%)	
Independent 15	82 (65.1)
Minimum help 10	35 (27.8)
Big Help 5	5 (4.0)
Dependent 0	4 (3.2)
Climbing stairs, n (%)	
Independent 10	86 (68.3)
Help 5	36 (28.6)
Dependent 0	4 (3.2)
Degree of dependence, n (%)	
Independent 100	74 (58.7)
Live >60-90	34 (27)
Moderate 40-55	14 (11.1)
Severe 20-35	0
Total dependent <20	4 (3.2)

A significance value of *p* was assigned* for the association between the sociodemographic and general characteristics with the independent group and with a *p*** for the association of general and sociodemographic characteristics with the dependent groups**.** Of the variables with statistical significance, the following were age for the independent group with a *p* of 0.046, BMI for the independent group with a *p* of 0.002, and the dependent groups with a *p* .004. Substance use was significant p.002 only for the independent group. Neuromuscular blockade was significant in both groups, as was delirium. The rest of the variables were not significant (Table 3).

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Table 3 Association between sociodemographic and general characteristics with independent group and dependent groups

	Independent n=74*	Mild dependent n=34**	Moderate dependent n=14**	Dependent total, n=4**	p*	p**
Age, mean (SD), years	49.2 (15)	56.9 (15.1)	57.2 (15.5)	46 (3.5)	0.046	0.621
Gender, M (%)	32 (43.2)	17 (50)	7 (50)	3 (75)	0.295	0.34
F	42 (56.8)	17 (50)	7 (50)	1 (25)		
BMI, n (%)						
Normal	27 (36.5)	16 (47.1)	2 (14.3)	2 (50)	0.002	0.004
Overweight	36 (48.6)	13 (38.2)	10 (71.4)	2 (50)		
Grade I	11 (14.9)	4 (11.8)	2 (14.3)	0		
Grade II	0	1 (2.9)	0	0		
Size, Medium (SD)	1.65 (.059)	1.67 (.084)	1.65 (.073)	1.67 (.079)	0.052	0.6
Weight, Mean (SD)	71.1 (10.1)	68.5 (10)	70.8 (10.1)	70 (9.8)	0.2	0.42
SOFA, median (IQR)	4 (2-9)	7 (3.5-8.5)	2 (1-3)	7 (2-8)	0.38	0.1
APACHE II, median (IQR)	6 (4-15)	13 (12-18.5)	9 (3-11)	13 (4-15)	0.1	0.2
Estado civil, n (%)						
bachelor	15 (20.3)	6 (17.6)	2 (14.3)	3 (75)	0.2	0.452
married	58 (78.4)	26 (76.5)	11 (78.6)	1 (25)		
common-law marriage	1 (1.4)	0	1 (7.1)	0		
widower	0	2 (5.9)	0	0		
Type of patient, n (%)					0.3	0.051
Medical	74 (100)	30 (88.2)	14 (100)	0		
Surgical	0	4 (11.8)	0	4 (100)		
Substance use, n (%)						
Tobacco	34 (45.9)	4 (11.8)	8 (57.1)	0	0.02	0.08
no	38 (51.4)	9 (26.5)	4 (28.6)	0		
alcohol and tobacco	2 (2.7)	21 (61.8)	6 (14.3)	4 (100)		
Organic support, n (%)						
MV	30 (40.5)	28 (82.4)	8 (57.1)	4 (100)	0.54	0.708
IHD	1 (1.4)	0	0	0		
None	36 (48.6)	4 (11.8)	4 (28.6)	0		
MV and IHD	7 (9.5)	2 (5.9)	2 (14.3)	0		
Sedentary, n (%)						
Midazolam	8 (10.8)	0	0	0	0.8	0.673
Propofol	1 (1.4)	4 (11.8)	0	0		
Dexmedetomidine	4 (5.4)	0	0	4 (100)		
Other	32 (43.2)	0	0	0		
None	12 (16.2)	0	4 (28.6)	0		
Midazolam/Propofol	13 (17.6)	28 (82.4)	9 (64.3)	0		
Dexmedetomidine /Propofol	4 (5.4)	2 (5.9)	1 (7.1)	0		
Days with sedation median (IQR)	4 (2-8)	13 (12-15)	13 (4.1-20)	14 (6-16)	0.987	0.824
Neuromuscular blockade, n (%)						
Yes	6 (8.1)	30 (88.2)	6 (42.9)	0	0.01	0.027
No	56 (75.7)	4 (11.8)	8 (57.1)	4 (100)		
infusion	12 (16.2)	0	0	0		
Steroids, n (%)	20 (27)	30 (88.2)	10 (71.4)	4 (100)	0.002	0.031
Delirium, n (%)	8 (10.8)	26 (76.5)	6 (42.9)	0	0.04	0.008
Death, n (%)	0	0	0	0	-	-

Abbreviations: M, male; F, female; RIC, interquartile range; SD, standard deviation; BMI, body mass index; CRRT, Continuous Renal Replacement Therapy; BIAC, Intra-Aortic Balloon Counter pulsation; MV, Mechanical Ventilation; IHD, Intermittent Hemodialysis; HD, Hemodynamic.

Statistical Test: Chi-square.

Comorbidities were associated with the dependent and independent groups, which were significant diabetes mellitus, diabetes complications, arterial hypertension, and dyslipidemias, with a $p < 0.05$ (Table 4).

A multivariate analysis was carried out, where the risks of being dependent in patients with PICS, finding that chronic renal failure presents 3.14 times the risk for dependence, diabetes 2.73 times the risk, having complications of diabetes presents an 8.62 times higher

risk of dependence, as well as steroids up to 13.85 times higher risk, followed by neuromuscular blockade with a risk factor of 6 times more and mechanical ventilation with up to 3.88 times the risk of dependence. An adjustment was made using a stepwise logistic regression model, finding that all variables lose significance; however, complications of diabetes continue to be significant with an OR of 7.90 with 95% CI (2.69-23.15), and the use of steroids with an OR 12.89 with a 95% CI (4.78-34.72) (Table 5, Figure 1).

Table 4 Association between comorbidities and the independent group, and dependent groups

	Independent n=74*	Mild dependent n=34**	Moderate dependent n=14**	Dependent total, n=4**	p*	p**
Diabetes Mellitus, n (%)	22 (29.7)	18 (52.9)	6 (42.9)	4 (100)	0.005	0.031
Complications of DM	8 (10.8)	18 (52.9)	6 (42.9)	4 (100)	0.011	0.02
Artery disease, n (%)	1 (1.4)	1 (1.4)	0	0	0.891	0.931
Dementia, n (%)	0	0	1 (7.1)	0	0.987	0.878
HAS, n (%)	21 (28.4)	10 (29.4)	2 (14.3)	0	0.009	0.04
Dyslipidemia, n (%)	18 (24.3)	10 (29.4)	2 (14.3)	0	0.03	0.021
Heart failure, n (%)	0	1 (2.9)	1 (7.1)	0	0.765	0.532
Ischemic heart disease, n (%)	6 (8.1)	1 (2.9)	0	0	0.9	0.869
Chronic renal failure, n (%)						
Yes	5(6.7)	6(17.6)	6(42.8)	0	0.712	0.643
No	69 (93.2)	28 (82.4)	8 (57.1)	0		
Grade 1	2 (2.7)	0	0	0		
Grade 2	1 (1.4)	0	1 (7.1)	0		
Grade 3	2 (2.7)	5 (14.7)	5 (35.7)	0		
Grade 4	0	1 (2.9)	0	0		
SLE, n (%)	2 (2.7)	4 (11.8)	0	0	0.87	0.921
HIV, n (%)	4 (5.4)	0	0	0	0.891	-
COPD, n (%)	0	5 (14.7)	1 (7.1)	0	-	0.724
Gastric ulcer, n (%)	0	0	1 (7.1)	0	-	0.91

Abbreviations: RIC, interquartile range; SD, standard deviation; DM, Diabetes Mellitus; CVD, Cerebral Vascular Event; SAH, High Blood Pressure; SLE, Systemic Lupus Erythematosus; HIV, Human Immunodeficiency Virus; COPD, Chronic Obstructive Pulmonary Disease.

Table 5 Risk factors for dependence in patients with pics

	Unadjusted			Adjusted		
Risk factors	**OR**	**95% IC**	**p**	**OR**	**95 % IC**	**p**
CKD	4.14	1.35-12.60	0.015			
DM	2.73	1.31-5.77	0.001			
Complications of DM	9.62	3.85-24.01	0.0001	7.9	2.69-23.15	< 0.001
Steroids	14.85	5.96-36.94	0.009	12.89	4.78-34.72	< 0.001
Neuromuscular blockade	7	3.16-15.47	0.001			
Mechanical ventilation	4.88	2.20-10.82	0.0001			

Abbreviations: OR, odds ratio; CI, confidence interval; DM, diabetes mellitus; CKD, chronic kidney failure.

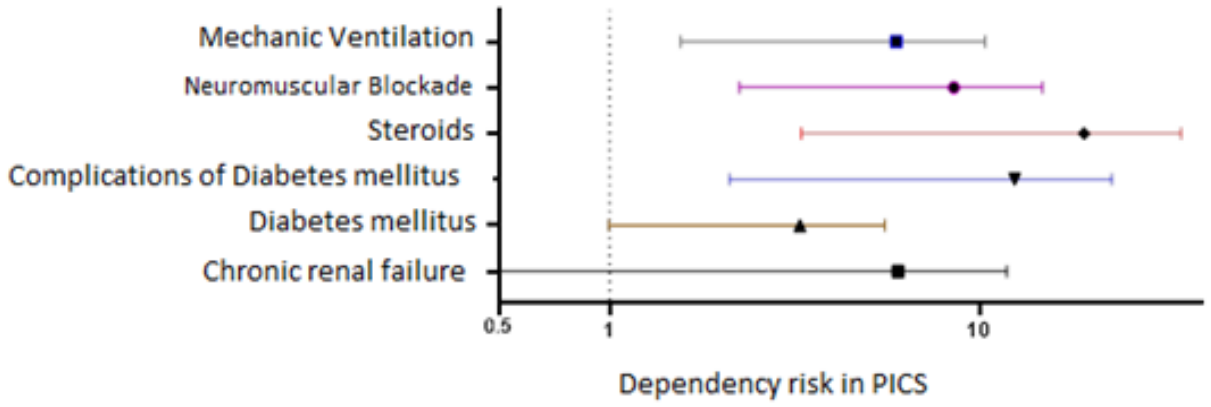

Figure 1 Forest plot factors associated with Dependency in patients with PICS.

Discussion

A total of 126 patients were included in our study, of which the most frequent disease was type 2 DM in 50 patients, followed by SAH in 33 patients and dyslipidemia in 30 patients, the risk factors for PICS were the presence of BMI between 25 and 29.9, the use of steroids during hospitalization for COVID, the presence of type 2 DM, SAH, which caused dependence to carry out activities measured through the Barthel scale. Post-intensive care syndrome includes physical, cognitive, or psychiatric impairment, which appears after a critical illness and persists after hospital discharge as evidenced in previous studies such as the BRAIN-ICU study in which patients were disabled in their activities of daily living at three months, 26% were disabled in instrumental activities of daily living,[16,17] where disability was prominent in those with and without pre-existing dysfunctions and these disabilities persisted in most patients at 12 months,[13] in this research it was obtained that 31.8% of the patients' required help to perform activities such as moving, urinating and defecating.

The risk factors that have been described in the PICS can be classified as pre-existing and ICU-specific factors, pre-existing risk factors can be mentioned for example: neuromuscular disorders, previous cognitive impairment, psychiatric illness, and frailty syndrome. In our study, the factors that were related to dependence in patients with PICS and that did not lose significance in the adjusted logistic regression model were the presence of diabetes complications with a p of 0.0001, and the use of steroids during hospitalization *p 0.009;* Diabetes Mellitus generates complications such as diabetic neuropathy that predisposes difficulty in mobilization, in addition, Mexico is in the first places worldwide in Obesity so our study correlates with the statistics.

The development of PICS syndrome has great implications in terms of public and socioeconomic health, since it generates alterations at the cognitive, psychiatric, and physical levels that prevent people from rejoining at a professional and family level, at present there is no standardized model for monitoring patients after their admission to the ICU.

In our population, a mild degree of dependence measured with the Barthel scale was generated in 34 patients in 27% of our population, 24 patients with p 0.041 were occasionally dependent to perform urination, 38 patients with p 0.034 required help to move and 36 patients with p .009 required help to climb stairs. Our results coincide with another study carried out in 2021 by Mateo et al. in Spain, where a population with characteristics similar to ours was studied, where the male sex, comorbidities, and degree of physical alteration predominated. According to the study by Barragán Becerra et al. carried out in 2018, 73% of patients after being hospitalized in ICU perform daily activities independently, 20% needed help and 7% were dependent, which correlates with our study where 65% of the population performed their activities independently, 31.8% required help and 4% were dependent.

Another study conducted by Rousseau et al, described cohort results of 38 patients with COVID 19, who were evaluated at one month, 3, and 12 months after hospital discharge, at 3 months they had not recovered functionality. Some publications show a mechanism of myopathy and myositis due to the involvement of the peripheral nervous system, with a pattern compatible with demyelination and axonal neuropathy without CSF alteration, in our population, they received corticosteroids and neuromuscular blockade, factors that contributed to their involvement, so the prevalence of PICS was 14.3% in patients discharged from the ICU of a tertiary care hospital.

Conclusion

The prevalence of PICS in patients discharged from a third-level intensive care unit was 14.3%. Most of the patients were males with a mean age of 52 years, with main comorbidities among which overweight 76.2%, type II DM were 39.7%, and SAH 26.2%. The main predisposing factors for dependence in patients with PICS were complications of diabetes and steroid use in 37.9%. The degree of dependence in the population was mild measured with the Barthel scale in 27% of the population, which generated difficulty in moving, so they required help to perform activities such as urination and bowel movements.

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None.

Conflicts of interest

None.

References

1. The Society of Critical Care Medicine. Morbidity and Mortality [Internet]. Critical Care Statistics. 2018.
2. Brown JJ, Sullivan G. Effect on ICU mortality of a full-time critical care specialist. *Chest.* 1989;96(1):127–129.
3. Rawal G, Yadav S, Kumar R. Post-intensive care syndrome: An overview. *J Transl Intern Med.* 2017;5(2):90–32.
4. Needham DM, Davidson J, Cohen H, et al. Improving long-term outcomes after discharge from intensive care unit: Report from a stakeholders' conference. *Crit Care Med.* 2012;40(2):502–509.
5. Barnes-Daly MA, Phillips G, Ely EW. Improving hospital survival and reducing brain dysfunction at Seven California Community Hospitals: Implementing PAD guidelines via the ABCDEF bundle in 6,064 patients. *Critical Care Medicine.* 2017;45:171–178.
6. Marra A, Pandharipande PP, Girard TD, et al. Co-Occurrence of Post-Intensive Care Syndrome Problems Among 406 Survivors of Critical Illness. *Crit Care Med.* 2018;46(9):1393–1401.
7. Patel MB, Jackson JC, Morandi A, et al. Incidence and risk factors for intensive care unit-related post-Traumatic stress disorder in veterans and civilians. *Am J Respir Crit Care Med.* 2016;193(12):1373–1381.
8. Pandharipande PP, Girard TD, Jackson JC, et al. Long-term cognitive impairment after critical illness. *N Engl J Med*. 2013;369(14):1306–1316.
9. Lee M, Kang J, Jeong YJ. Risk factors for post–intensive care syndrome: A systematic review and meta-analysis. *Aust Crit Care*. 2020;33(3):287–294.
10. Woon FL, Dunn CB, Hopkins RO. Predicting cognitive sequelae in survivors of critical illness with cognitive screening tests. *Am J Respir Crit Care Med.* 2012;186(4):333–340.
11. Cid-Ruzafa J, Damián-Moreno J. Valoracion de la discapacidad fisica: El Indice de Barthel. *Rev Esp Salud Publica.* 1997;71(2):127–137.
12. La VDE, Física D, Indice EL, et al. Evaluating Physical Incapacity: the Barthel Index labor de rutina en los centros y unidades de discapacidad física son cada vez más utiliza- nica2, especialmente en los ancianos, cuya portante de los principales instrumentos ción física es imprescindib. 1997;(1).
13. Solís C, Arrioja S, Manzano A. Índice de Barthel (IB): Un instrumento esencial para la evaluación funcional y la rehabilitación. *Plast y restauración.* 2005;4:1–6.
14. Loewen SC, Anderson BA. Reliability of the Modified Motor Assessment Scale and the Barthel Index. *Phys Ther.* 1988;68(7):1077–1081.