

Knowledge of nursing teams regarding clinical manifestations and risk group for COVID-19

Conhecimento de equipes de enfermagem quanto às manifestações clínicas e grupo de risco para COVID-19

Conocimiento de los equipos de enfermería sobre manifestaciones clínicas y grupos de riesgo para COVID-19

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ABSTRACT

Objective: to compare the knowledge of nurses and nursing technicians working in Emergency Care Units regarding the recognition of clinical manifestations and risk groups for the development of the severe form of COVID-19. **Method:** descriptive study, carried out with 53 professionals from three emergency care units, with data collection carried out through a self-answered questionnaire. Data analyzed using descriptive and inferential statistics (t-student and chi-square tests). Research protocol approved by the institution's Research Ethics Committee. **Results:** an association stands out between the mention of clinical manifestations such as nausea and vomiting, risk groups and the role, nurses or nursing technicians ($p < 0.05$) and the level of training, that is, nurses reported with the presence of these symptoms was more frequent than nursing technicians. **Conclusion:** nursing professionals have knowledge regarding symptoms and risk groups, even if there is a difference between the professional level.

Descriptors: Emergency Medical Services; Nursing care; Pandemics; COVID-19; Signs and Symptoms.

RESUMO

Objetivo: comparar o conhecimento de enfermeiros e técnicos de enfermagem de Unidades de Pronto Atendimento quanto ao reconhecimento de manifestações clínicas e grupos de risco para o desenvolvimento da forma grave da COVID-19. **Método:** estudo descritivo, realizado com 53 profissionais de três unidades de pronto atendimento, com coleta de dados realizada por meio de questionário autorrespondido. Dados analisados por meio de estatística descritiva e inferencial (testes t-student e qui-quadrado). Protocolo de pesquisa aprovado pelo Comitê de Ética em Pesquisa da instituição. **Resultados:** destaca-se uma associação entre a citação de manifestações clínicas como náuseas e vômitos, grupos de risco e a função, enfermeiros ou técnicos de enfermagem ($p < 0,05$) e o nível de formação, ou seja, os enfermeiros relataram com maior frequência a presença desses sintomas que os técnicos de enfermagem. **Conclusão:** os profissionais de enfermagem apresentam conhecimento quanto a sintomatologia e grupos de risco, ainda que haja diferença entre o nível profissional.

Descritores: Serviços Médicos de Emergência; Cuidados de Enfermagem; Pandemias; COVID-19; Sinais e Sintomas.

RESUMEN

Objetivo: comparar los conocimientos de enfermeros y técnicos de enfermería que trabajan en Unidades de Atención de Emergencia sobre el reconocimiento de manifestaciones clínicas y grupos de riesgo para el desarrollo de la forma grave de COVID-19. **Método:** estudio descriptivo, realizado con 53 profesionales de tres unidades de atención de emergencia, con recolección de datos realizada a través de un cuestionario auto respondido. Datos analizados mediante estadística descriptiva e inferencial (pruebas t de Student y chi-cuadrado). Protocolo de investigación aprobado por el Comité de Ética en Investigación de la institución. **Resultados:** se destaca asociación entre la mención de manifestaciones clínicas como náuseas y vómitos, grupos de riesgo y el rol, enfermeros o técnicos de enfermería ($p < 0,05$) y el nivel de formación, es decir, los enfermeros reportaron la presencia de estos síntomas. fue más frecuente que los técnicos de enfermería. **Conclusión:** los profesionales de enfermería tienen conocimientos sobre síntomas y grupos de riesgo, aunque exista diferencia entre el nivel profesional.

Descriptor: Servicios Médicos de Urgencia; Atención de Enfermería; Pandemias; COVID-19; Signos y Síntomas.

INTRODUCTION

Pre-hospital emergency care systems, such as the Emergency Care Units (*Unidades de Pronto Atendimento*, UPAs), represent the first contact with the health system for most people. The professionals who provide care in these places must be prepared to manage severe cases, involving children or adults, in medical, surgical and/or obstetric emergency situations¹.

Most urgencies and emergencies that arrive at UPAs can be effectively solved²⁻⁶. In addition, fast response and stabilization of the clinical condition in cases considered severe, referring to the hospital unit when necessary, are a priority in these health services⁷.

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Despite the increase in the number of existing UPAs, most of these facilities are characterized by precariousness, lack of adequate physical structure and diagnostic support services, shortage of materials and unprepared staff, hindering the professionals' work, in addition to compromising quality of the service provided⁸⁻¹⁰. Thus, the existence and full operation of UPAs acquire relevance especially in situations or places where there are physical or financial difficulties accessing health services; in these circumstances, people seek only assistance when they have acute diseases or injuries¹.

Patients with suspected COVID-19 are also advised to attend UPAs to receive care in cases of milder clinical manifestations or after been treated at a Basic Health Unit (BHU); if in more serious cases, an attempt is made to refer them to hospitals, evaluating each case to define treatment in home or hospital isolation¹¹. Guidelines are also offered regarding COVID-19 prevention, which includes measures to avoid person-to-person transmission of the virus^{11,12}.

However, even though health services had met the consultations and guidelines, the pandemic prolonged itself in time and, after two years, there were moments when the disease was intensified, especially in the face of new variants, as well as a reduction in cases and deaths in the face of widespread vaccination. However, confirmed cases still continue to arise; therefore, it is recommended that diagnosed patients receive health care to relieve the symptoms, whose characteristics are similar to those identified in cases of common flu caused by the influenza virus¹¹.

The literature shows that the clinical manifestations of the disease are varied, especially after confirming several variants, and may include fever, cough, fatigue, myalgia, pneumonia, headache, anorexia, diarrhea, hemoptysis and dyspnea¹¹. In addition to that, the patients can also develop a number of complications such as acute respiratory distress syndrome, acute cardiac injury, acute kidney injury, secondary infections and shock^{12,13}.

Furthermore, in relation to previously published studies, the following were identified as the main clinical manifestations in patients with a positive COVID-19 diagnosis: joint pain; loss of appetite, smell and taste; sore throat; and nasal congestion. A number of studies have evidenced that such manifestations may vary if a patient with a positive diagnosis already has a chronic disease, as in cases of patients with asthma, situations where fatigue, headache, shortness of breath, sputum production, chest pain, chills and diarrhea have been reported^{14,15}.

In view of the above, it is understood that recognizing the symptomatology of COVID-19 cases is essential for rapid and effective interventions, with health professionals' perception (especially those in Nursing) about the presence of clinical manifestations and risk groups for the disease still characterizing a gap in the literature. Therefore, considering the importance of the Nursing team's performance during outbreaks and epidemics at all care levels, especially in those that constitute one of the main users' gateways to the health system.

Thus, this study aimed at to compare the knowledge of nurses and nursing technicians working in Emergency Care Units regarding the recognition of clinical manifestations and risk groups for the development of the severe form of COVID-19.

METHOD

This is a cross-sectional and analytical study carried out in three UPAs from the municipality of São Carlos, São Paulo.

The population consisted of the units' Nursing teams and the following inclusion criteria were defined for participation: Nursing professionals who had been working at the institution during the COVID-19 pandemic for at least three months. The exclusion criteria were as follows: professionals who were on leave and/or away during the pandemic; those who were on leave and/or vacation at the collection moment; and also, those who did not make themselves available for the interviews after three appointments.

The data were collected from December 2021 to March 2022 through a self-reported questionnaire answered by the participants. The data collection instrument was built based on the clinical management protocols for COVID-19 from the Ministry of Health, totaling eight questions referring to the routine, use of Personal Protective Equipment (PPE), prevention measures, physical structure of the unit, Nursing care, difficulties, weaknesses and notification, in addition to symptomatology and risk groups to develop the severe form of COVID-19¹⁶.

After its elaboration, the instrument was evaluated by three specialists in the area to verify its pertinence and adequacy. For better refinement of the methods to be used in this study, a pre-test of the questionnaire was carried out in order to obtain a more accurate perception of the complications that might arise while developing the research, enabling changes, if necessary, before initiating the collection procedure itself¹⁷.

For the analysis of the data collected, they were entered into a database built in Microsoft Excel®. The variables were coded by the researcher according to the alternatives offered in each item, so as to enable the statistical analysis. Initially, a descriptive data analysis was performed and, subsequently, an inferential statistical analysis.

The data were migrated to the SAS 9.2 program, where Student's *t* tests were performed to compare means and chi-square tests to study the association with categorical data. A 5% significance level was adopted for all the comparisons.

The research was approved by the Research Ethics Committee (*Comitê de Ética em Pesquisa, CEP*) of the institution involved¹⁸.

RESULTS AND DISCUSSION

After applying the inclusion and exclusion criteria, 53 professionals took part in the study, 48.6% of the total population initially planned (*n*=109). During the data collection period, among the three UPAs, 11 nursing technicians (13.7%) and 16 nurses did not take part in the research because they were on vacation; and the others did not accept to participate (55.1%).

Among the 53 participants, 39 were nursing technicians (73.6%) and 14 were nurses (26.4%). It is noted that this higher percentage of technical professionals was already expected due to their greater number in the Nursing teams, as provided for in COFEN Resolution No. 543 dated April 18th, 2017, which defines that, for minimum- and intermediate-level care, the mandatory is that the team is comprised by 33% nurses and other professionals with a technical and/or auxiliary level; for high-dependence care, it is mandatory that the team consists of 36% nurses and the rest of nursing technicians and/or assistants and that, for semi-intensive care, the obligation is 42% nurses and the rest of technicians and/or assistants¹⁹.

The Nursing professionals were asked about the clinical manifestations that may be present in symptomatic COVID-19 patients (Table 1).

TABLE 1: Identification of respiratory clinical manifestations in COVID-19 patients, mentioned by Nursing professionals working in the UPAs from the municipality of São Carlos (*n*=53). São Carlos, SP, Brazil, 2022.

Variable	Total n (%)	Nurses n (%)	Nursing Technicians n (%)	p-value*
Dyspnea				0.68
Yes	47 (88.7)	12 (85.7)	35 (89.7)	
No	6 (11.3)	2 (14.3)	4 (10.3)	
Cough				-
Yes	53 (100.0)	14 (100.0)	39 (100.0)	
No	-	-	-	
Runny nose				0.39
Yes	51 (96.2)	14 (100.0)	37 (94.9)	
No	2 (3.8)	-	2 (5.1)	
Nasal congestion				0.25
Yes	44 (83)	13 (92.9)	31 (79.5)	
No	9 (17)	1 (7.1)	8 (20.5)	
Loss of smell				-
Yes	53 (100.0)	14 (100.0)	39 (100.0)	
No	-	-	-	
Respiratory distress				0.55
Yes	52 (98.1)	14 (100.0)	38 (97.4)	
No	1 (1.9)	-	1 (2.6)	
Sore throat				-
Yes	53 (100.0)	14 (100.0)	39 (100.0)	
No	-	-	-	

Note: *Inferential statistical analysis: chi-square test with 5% significance.

Cough, loss of smell and sore throat, respiratory distress, runny nose, dyspnea and nasal congestion stood out. It is noted that, among the nurses and nursing technicians, the respiratory clinical manifestations referred to in a more divergent way were runny nose, which was reported by all the participating nurses, whereas most of the participating nursing technicians reported respiratory distress.

There is also a difference in recognition of nasal congestion, which was mentioned by 13 (92.9%) nurses, whereas 31 (79.5%) nursing technicians recognized this symptom.

In the literature, it is verified that the following are among the main clinical manifestations identified in the COVID-19 patients fever, cough, fatigue, anorexia, dyspnea, myalgia, sore throat, nasal congestion, headache, diarrhea, nausea, vomiting, loss of smell (anosmia) and loss of taste (ageusia), in addition to the possibility of neurological manifestations (dizziness, agitation, weakness, seizures, sensory or balance loss)^{11,20}.

According to a systematic review that included 25 studies, chest pain stood out (in up to 89% of the studies), as well as dyspnea (61%), cough and sputum production (59%)²¹. The results of the current study corroborate the aforementioned review, as the Nursing professionals recognized the most frequent respiratory clinical manifestations.

In relation to the respiratory symptoms, the autopsy analyses performed in people who died due to COVID-19 evidenced fluid accumulation in the alveolar walls; in addition, other analyzes pointed out small spots that indicate pleural involvement and lobar lesions, causing the clinical conditions reported²².

In addition to the respiratory clinical manifestations, most of the participants reported presence of diarrhea; and most of the participating nurses also mentioned presence of vomiting, nausea and abdominal pain (Table 2).

TABLE 2: Identification of gastrointestinal clinical manifestations in COVID-19 patients, mentioned by Nursing professionals working in the UPAs from the municipality of São Carlos (n=53). São Carlos, SP, Brazil, 2022.

Variable	Total n (%)	Nurses n (%)	Nursing Technicians n (%)	p-value*
Nausea				0.04
Yes	29 (54.7%)	11 (78.6%)	18 (46.1%)	
No	24 (45.3%)	3 (21.4%)	21 (53.8%)	
Vomiting				<0.01
Yes	30 (56.6%)	13 (92.9%)	17 (43.6%)	
No	23 (43.4%)	1 (7.1%)	22 (56.4%)	
Abdominal pain				0.24
Yes	27 (50.9%)	9 (64.3%)	18 (46.1%)	
No	26 (49.1%)	5 (35.7%)	21 (53.8%)	
Diarrhea				0.57
Yes	47 (88.7%)	13 (92.9%)	34 (87.2%)	
No	6 (11.3%)	1 (7.1%)	5 (12.8%)	

Note: *Inferential statistical analysis: chi-square test with 5% significance.

The significant associations between the “presence of nausea” variable and the role performed by the professionals stand out ($p=0.04$); as well as between the “presence of vomiting” variable and the function performed by the professionals ($p<0.01$). In other words, depending on the role performed by each professional, the answers about absence or presence of the symptom in patients for vomiting and nausea tend to be different. Thus, the function they perform is associated with a given perception. In this case, it was observed that the nurses reported these manifestations more frequently than the nursing technicians.

The literature reports diarrhea, vomiting, anorexia and abdominal pain/discomfort among the clinical manifestations related to the gastrointestinal system in positive COVID-19 cases. Diarrhea manifested itself up to ten days after the respiratory clinical manifestations, lasting from four to five days, and was generally associated with moderate or severe manifestations of COVID-19. On the other hand, in relation to the clinical manifestations of nausea and vomiting, both are related to more severe forms of the disease. Finally, abdominal pain is a symptom less present in the patients, evidenced in people who were assisted in the Intensive Care Unit (ICU)²³.

It is noted that these manifestations result from viral binding to the Angiotensin-Converting Enzyme 2 (ACE2) receptor, in which the virus is endocytosed, reducing the ACE2 levels and resulting in an imbalance in the intestinal epithelium, which causes an increase of the inflammatory process in intestinal cells²³.

In addition to the gastrointestinal clinical manifestations, a minority of participants mentioned the presence of skin rash and urticaria (Table 3).

TABLE 3: Identification of epithelial clinical manifestations in COVID-19 patients mentioned by Nursing professionals working in UPAs from the municipality of São Carlos (n=53). São Carlos, SP, Brazil, 2022.

Variable	Total n (%)	Nurses n (%)	Nursing Technicians n (%)	p-value*
Skin rash				0.19
Yes	10 (18.9%)	1 (7.1%)	9 (23.1%)	
No	43 (81.1%)	13 (92.9%)	30 (76.9%)	
Urticaria				0.57
Yes	6 (11.3%)	1 (7.1%)	5 (12.8%)	
No	47 (88.7%)	13 (92.9%)	34 (87.2%)	

Note: *Inferential statistical analysis: chi-square test with 5% significance.

The epithelial clinical manifestations among people with COVID-19 were identified for the first time in Italian territory; they were reported as presence of skin rash and erythema, along with manifestation of urticaria and of vesicles present mainly in the trunk region and in the body limbs; on the other hand, the manifestations of urticaria are generalized and reported more frequently²⁴.

In relation to the manifestation of urticaria cases, the causes are associated with the fact that COVID-19 patients present direct mast cell degranulation or use a large number of medications for the treatment of COVID-19²⁴

Among other epithelial clinical manifestations mentioned in the literature is the occurrence of necrosis; for the treatment of the initial manifestations of erythema and rashes, antihistamine medications, topical steroid cream for urticaria relief, and therapy using antiviral drugs are prescribed²⁵.

In relation to the presence of other manifestations identified in people with COVID-19 it is noted that most of the professionals reported fever and headache, prostration and myalgia (Table 4).

TABLE 4: Clinical manifestations in patients with COVID-19 mentioned by Nursing professionals working in UPAs from the municipality of São Carlos. São Carlos, SP, Brazil, 2022.

Variable	Total n (%)	Nurses n (%)	Nursing Technicians n (%)	p-value*
Myalgia				0.11
Yes	41 (77.4%)	13 (92.9%)	28 (71.8%)	
No	12 (22.6%)	1 (7.1%)	11 (28.2%)	
Adynamia				0.23
Yes	23 (43.4%)	8 (57.1%)	15 (38.5%)	
No	30 (56.6%)	6 (42.9%)	24 (61.5%)	
Fever				-
Yes	53 (100%)	14 (100%)	39 (100%)	
No	-	-	-	
Headache				0.55
Yes	52 (98.1%)	14 (100%)	38 (97.4%)	
No	1 (1.9%)	-	1 (2.6%)	
Prostration				0.11
Yes	41 (77.4%)	13 (92.9%)	28 (71.8%)	
No	12 (22.6%)	1 (7.1%)	11 (28.2%)	
Weight loss				0.83
Yes	14 (26.4%)	4 (28.6%)	10 (25.6%)	
No	39 (73.6%)	10 (71.4%)	29 (74.4%)	

Key: *Inferential statistical analysis: chi-square test with 5% significance.

A review study identified that, among the pathologies associated with COVID-19, myalgia and muscle dysfunction cases stand out, along with the patients associating the highest pain rates with the musculoskeletal system²⁶.

Therefore, once a patient has been identified with a condition based on the clinical manifestations, it is up to the Nursing team to carry out an assessment in relation to the etiology and factors that may be contributing to their occurrence; as well as to perform a comprehensive pain assessment aiming to identify its intensity, location, onset, frequency and duration²⁷.

In relation to fever, it is noted that it is a viral infection process, in addition to the presence of headache, resulting from the cytokine storm that occurs due to the increase in interleukin; with the cytokine storm there is an aseptic meningeal reaction and, therefore, the headache results from body exposure to cytokines²⁸.

Prostration and weight loss also stand out as clinical manifestations. The first one arises due to the presence of the other manifestations, mainly headache, which causes indisposition, which can be reinforced with the very malaise of the infectious process, present in the manifestation of fever²⁹.

Also related to prostration is muscle mass loss due to the decrease in the person's activity, which may lead to weight loss in COVID-19 patients. It is noted that weight loss among people with COVID-19 can also be related to the occurrence of a massive inflammatory reaction that causes a metabolic imbalance, which may be accompanied by loss of appetite due to loss of taste and smell, causing lack of interest in relation to food intake and, in severe cases of hospitalized patients there is immobilization, that is, any physical activity is suspended and there is muscle loss depending on the hospitalization time³⁰.

It is emphasized that such manifestations can vary according to the variant with which the individual is infected and, in relation to the Omicron variant, the following were detected: fatigue, headache, muscle pain and sore throat, absence of taste and smell impairment, dry cough and tachycardia. In relation to the Delta variant, runny nose, headache, fever, sneezing, sore throat and persistent cough were highlighted. With the Gamma variable, gastrointestinal clinical manifestations such as diarrhea and vomiting are presented more specifically, along with the more common manifestations of cough, sore throat, fever, shortness of breath and tiredness; with the Alpha variant, smell and taste impairment, loss of appetite, cough and chills were identified; and, in relation to the Beta variant, diarrhea and vomiting, fever, sore throat, body pain, shortness of breath, tiredness and fatigue were identified³¹.

With regard to the identification of risk groups for the development of the severe form of COVID-19, it is noted that most of the interviewees stated presence of chronic lung or heart diseases; diabetes mellitus, arterial hypertension, obesity and immunosuppression conditions, in addition to mentioning that older adults, children under 5 years old and pregnant women are prone to developing the severe form of the disease (Table 5).

TABLE 5: Identification of risk groups for COVID-19, by Nursing professionals working in UPAs from the municipality of São Carlos. São Carlos, SP, Brazil, 2022.

Variable	Total n (%)	Nurses n (%)	Nursing Technicians n(%)	p-value*
Older adults				0.39
Yes	51 (96.2%)	14 (100%)	37 (94.9%)	
No	2 (3.8%)	-	2 (5.1%)	
Children under 5 years old				0.05
Yes	26 (49%)	10 (71.4%)	16 (41%)	
No	27 (51%)	4 (28.6%)	23 (59%)	
Diabetics				0.55
Yes	52 (98.1%)	14 (100%)	38 (97.4%)	
No	1 (1.9%)	-	1 (2.6%)	
Hypertensive				0.55
Yes	52 (98.1%)	14 (100%)	38 (97.4%)	
No	1 (1.9%)	-	1 (2.6%)	
Pregnant women				0.92
Yes	45 (84.9%)	12 (85.7%)	33 (84.6%)	
No	8 (15.1%)	2 (14.3%)	6 (15.4%)	
Individuals with chronic lung or heart diseases				-
Yes	53 (100%)	14 (100%)	39 (100%)	
No	-	-	-	
Immunosuppression conditions				0.55
Yes	52 (98.1%)	14 (100%)	38 (97.4%)	
No	1 (1.9%)	-	1 (2.6%)	
Obese individuals				0.55
Yes	52 (98.1%)	14 (100%)	38 (97.4%)	
No	1 (1.9%)	-	1 (2.6%)	

Key: *Inferential statistical analysis: chi-square test with 5% significance.

However, no statistically significant association was identified between the “risk group” variable and the role performed by the professionals.

People with chronic diseases (cardiac, respiratory, renal, hepatic and neurological) and immunosuppression conditions were prioritized to receive the first doses of the anti-COVID vaccine, as they are at an increased risk of developing the severe form of COVID-19 and, consequently, present more hospitalization chances³².

A number of studies have identified that critically-ill fasting patients with COVID-19 presented high blood glucose levels, identifying the possibility that the disease interferes with the glucose metabolism process. Thus, people with DM are at a higher risk of developing the severe form of COVID-19 due to the possibility of metabolic dysregulation in their bodies, which already have the prior impairment of adequate glucose metabolism³³.

In addition, the aged population was also included in the risk group for presenting higher death percentages; this factor is related to immunosenescence, that is, the aging process of the immune system that takes place with advancing age, rendering people more susceptible to acquiring infections due to the fact that the immune response is not fully efficient and the vaccine response is reduced³⁴.

Study limitations

Although the study has met the objective proposed, it is emphasized that its limitation is related to adherence of the Nursing professionals included in the research, although this did not interfere with the potentiality of the results found.

CONCLUSION

It is concluded that the Nursing team's role in assisting COVID-19 patients is essential, as they work from welcoming to risk stratification, in addition to providing initial care. Therefore, it is important that the team is duly qualified, so that the assistance provided is effective and safe.

The importance of its performance in identifying suspected cases is highlighted, in addition to acting in the dissemination of preventive measures, thus avoiding contagion of other patients. In many services, screening can be considered the first care contact between patients and teams, which is in charge of nursing technicians. Thus, these professionals must be trained and updated in order to correctly identify the clinical manifestations and recognize the disease dynamics, along with variations in the clinical manifestations and whether the individual belongs to any risk group.

Based on this study, the importance of professional training is reinforced regardless of the training level, so that the assistance offered to patients who seek UPAs is of good quality, comprehensive and effective. Thus, there should be continuous development of permanent education actions aimed at Nursing teams and it is important to consider the challenges and weaknesses encountered in the routine of health services.

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