RESEARCH

KNOWLEDGE, ATTITUDES AND PRACTICES OF HEALTH CARE PROFESSIONALS DURING THE COVID-19 PANDEMIC

CONHECIMENTO, ATITUDES E PRÁTICAS DOS PROFISSIONAIS DE SAÚDE NA PANDEMIA DA COVID-19

CONOCIMIENTOS, ACTITUDES Y PRÁCTICAS DE LOS PROFESIONALES DE LA SALUD EN LA PANDEMIA DE COVID-19

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ABSTRACT

Objective: to analyze and discuss the knowledge, attitudes and practices of nurses, physiotherapists and doctors during the COVID-19 pandemic. **Method:** a cross-sectional, observational and descriptive study was carried out. It was of an inquisitive nature, and adopted a quantitative approach by applying the Knowledge, Attitudes and Practices (KAP) survey to nurses, physiotherapists and physicians from four Intensive Care Units (ICUs), three of which were located in the Zona da Mata region of Minas Gerais (MG), and one in the state of Rio de Janeiro (RJ). **Results: o**ne hundred and sixteen professionals participated in the study, 68.1% of whom were females; 50.8% were 30 to 40 years old; 36.2% were nurses, 30.2% were physiotherapists, and 33.6% were physicians; 79.4% worked in a single ICU; 60% worked 40 hours a week. **Discussion:** it was observed that the professionals in ICU A showed low scores for knowledge and attitudes and a moderate score for practices, as well as a larger number of discharges and a smaller number of deaths; in ICU B, low scores were found for knowledge and practices and a moderate score was seen for attitudes, with a moderate number of discharges and deaths; in ICU C, low scores were found for knowledge, a moderate score was observed for attitudes and practices, and small number of discharges and a large number of deaths were reported; and in ICU D, there were low scores for knowledge and very low scores for attitudes and practices, with a moderate number of discharges and deaths. **Conclusion:** The low level of knowledge, attitudes and practices of health care professionals concerning the care of patients with COVID-19 can indicate a high level of vulnerability in health care services.

Keywords: COVID-19; Health Care Personnel; Intensive Care Units; Critical Care; Health Care Knowledge, Attitudes and Practice.

RESUMO

Objetivo: analisar e discutir o conhecimento, as atitudes e as práticas de enfermeiros, fisioterapeutas e médicos durante a pandemia da COVID-19. Método: realizou-se um estudo transversal, observacional e descritivo, de natureza inquisitiva, com abordagem quantitativa, por meio da aplicação da escala Conhecimento, Atitudes e Práticas (CAP) a enfermeiros, fisioterapeutas e médicos de quatro Unidades de Terapia Intensiva (UTI), sendo três localizadas na Zona da Mata de Minas Gerais (MG) e uma, no Estado do Rio de Janeiro (RJ). Resultados: participaram do estudo 116 profissionais, dos quais 68,1% eram do sexo feminino; 50,8% tinham entre 30-40 anos; 36,2% eram enfermeiros, 30,2% fisioterapeutas e 33,6% médicos; 79,4% trabalhavam em uma única UTI; 60% cumpriram jornadas de 40 horas semanais. Discussão: observou-se que os profissionais da UTI A apresentaram baixos escores de conhecimento e de atitudes e moderado escore de práticas, além de um maior número de altas e um menor número de óbitos; na UTI B, identificaram-se baixos escores de conhecimento e de práticas e moderado escore de atitudes, com um número moderado de altas e de óbitos; na UTI C, foram constatados baixos escores de conhecimento, moderados escores de atitudes e de práticas, um baixo número de altas e alto número de óbitos; e, na UTI D, averiguaram-se baixos escores de conhecimento, muito baixos de atitudes e de práticas, com um número moderado de altas e óbitos. Conclusão: o baixo nível de conhecimento, atitudes e práticas dos profissionais de saúde sobre o cuidado aos pacientes com COVID-19 pode indicar uma alta vulnerabilidade dos serviços de saúde.

Palavras-chave: COVID-19; Pessoal de Saúde; Unidades de Terapia Intensiva; Cuidados Críticos; Conhecimentos, Atitudes e Práticas em Saúde.

RESUMEN

Objetivo: analizar y discutir los conocimientos, actitudes y prácticas de enfermeras, fisioterapeutas y médicos durante la pandemia de COVID-19. Método: se realizó un estudio transversal, observacional y descriptivo, de carácter indagatorio, con enfoque cuantitativo, mediante la aplicación de la escala de Conocimientos, Actitudes y Prácticas (CAP) a enfermeras, fisioterapeutas y médicos de cuatro Unidades de Cuidados Intensivos. (UCI), tres de ellas ubicadas en la región de la Zona da Mata de Minas Gerais (MG) y una en el Estado de Río de Janeiro (RJ). Resultados: participaron en el estudio 116 profesionales, de los cuales el 68,1% eran mujeres; El 50,8% tenía entre 30 y 40 años; El 36,2% eran enfermeras, el 30,2% fisioterapeutas y el 33,6% médicos; El 79,4% trabajaba en una sola UCI; El 60% trabajaba 40 horas semanales. Discusión: Se observó que los profesionales de la UCI A presentaron puntuaciones bajas en conocimientos y actitudes, y moderadas en prácticas, además de un mayor número de altas y un menor número de muertes; en la UCI B se identificaron puntuaciones bajas en conocimientos y prácticas, y moderadas en actitudes, con un número moderado de egresos y muertes; en la

UCI C se encontraron bajos puntajes de conocimientos, moderados puntajes de actitudes y prácticas, un bajo número de egresos y un alto número de muertes; y en UTI D se encontraron bajos conocimientos, actitudes y prácticas muy bajas, con un número moderado de egresos y muertes. **Conclusión**: *el bajo nivel de conocimientos, actitudes y prácticas de los profesionales de la salud respecto a la atención a los pacientes con COVID-19 puede indicar una alta vulnerabilidad de los servicios de salud.*

Palabras clave: *COVID-19; Personal de Salud; Unidades de cuidados intensivos; Cuidados críticos; Conocimientos, Actitudes y Prácticas en Salud.*

INTRODUCTION

In late January 2020, the World Health Organization (WHO) in Geneva, Switzerland, declared the outbreak of the new coronavirus a public health emergency of international concern[1]. The name COVID-19 was given in reference to the type of virus and the year the pandemic began[2].

SARS-CoV-2 infection ranged from asymptomatic and mild to severe and critical cases. Monitoring infected individuals required special attention to the deterioration of their clinical picture with complications such as severe acute respiratory syndrome, sepsis, acute renal failure and thromboembolic events, which increased the mortality rate[3,4].

Between 2020 and 2021, Brazil was one of the countries with the highest number of confirmed cases and deaths, second only to the United States of America[5]. According to data provided daily to the Ministry of Health by state health departments, 22,012,150 cases and 612,587 deaths were recorded in the country during this period. The cumulative incidence rate was 10,395.1 per 100,000 inhabitants, while the cumulative mortality rate reached 289.3 per 100,000 inhabitants[5]. In Minas Gerais, there were 2,210,587 confirmed cases and 56,301 deaths[6]; in Juiz de Fora, 46,208 cases and 2,069 deaths[6]; in the state of Rio de Janeiro, 1,346,494 cases and 69,124 deaths[7]; and in the municipality of Vassouras, 5,158 cases and 148 deaths[8].

Given the impact of the pandemic, an intensive reorganization of care for COVID-19 patients became necessary, including the provision of beds, the expansion of vacancies in intensive care units (ICUs) and special wards, the purchase of hospital and personal protective equipment, and the recruitment and training of professionals[9].

WHO recommended that health care institutions should ensure that frontline workers have access to information, adequate training and emotional support, as well as the provision of personal protective equipment (PPE) and other resources to promote evidence-based care for COVID-19 patients[10].

At the beginning of the pandemic, knowledge about the virus was limited and gradually increased as modes of transmission, signs and symptoms were identified. The uncertainty created by the lack of information particularly affected those involved in the care of patients in intensive care units (ICUs).

It became clear that the care of COVID-19 patients would require the collaborative action of a multidisciplinary team, including physicians, nurses, physiotherapists, pharmacists, and others, who by working together could minimize sequelae and reduce mortality[11]. By working together, the uniqueness of each profession would complement each other in the care of patients.

As health care professionals, we are committed to understanding the reality of caring for COVID-19 patients by using the KAP method[12-19] to analyze and discuss the levels of knowledge, attitudes, and practices of a group of professionals.

This method is based on the principle that health care behavior is the result of a sequential process: it begins with the acquisition of scientifically proven knowledge, which can influence the formation of favorable attitudes and the adoption of health care practices[12,15].

Several studies have discussed the development of skills and the choice of attitudes and practices that are relevant to decision-making in health care. These are issues that raise the need for studies investigating the context of manifestation of COVID-19, the necessary requirements for comprehensive, competent and qualified care that demands the best knowledge, attitudes and practices, using the Knowledge, Attitudes and Practices (KAP) method[12-19], with health care professionals in different countries, aiming at collecting information on knowledge, beliefs and practices in the care of patients with COVID-19.

Zhang[12] conducted a study of 1,327 health care professionals (physicians, nurses, and paramedics) in which 89% showed sufficient knowledge of COVID-19; a direct correlation was observed between the level of knowledge and attitudes, indicating that the greater the knowledge, the greater the professionals' confidence in controlling the virus[12].

Prabina Ghimire, Samriddh Dhungel and Anil Pokhrel[13], in a study of 426 participants, identified gaps in knowledge, practices and attitudes, presenting both positive and negative viewpoints, mainly related to the prevention of SARS-CoV-2 transmission. It was highlighted that even among health care professionals with access to the Internet, there was a significant gap in universal infection prevention and control practices[14].

In a multinational study in Latin America, involving 251 health professionals from 19 countries, Sousa[14]

described that almost half of the sample had poor knowledge of COVID-19 and that their level of knowledge was associated with institution type, participation in training and sources of information.

The data from these studies will be useful to better understand the dynamics of prevention and treatment for the COVID-19 pandemic, thus helping to identify gaps and plan specific interventions.

Therefore, the objectives of this study were to analyze and discuss the knowledge, attitudes, and practices of nurses, physiotherapists, and physicians during the COVID-19 pandemic.

METHOD

This study is characterized by a cross-sectional, observational and descriptive survey-type approach, with a quantitative orientation. The KAP scale[12-19] was used in a sample composed of nurses, physiotherapists and physicians working in four ICUs, three of which are located in the Zona da Mata region of Minas Gerais state and one in Rio de Janeiro state. These hospitals, in addition to providing medical and hospital care, are currently recognized as references in the treatment of COVID-19 patients and play a crucial role in the education and training of human resources in the health care sector, including undergraduate, graduate and research programs.

A random sample of 98 health care professionals was used, allowing probabilistic inferences to be made about the target population based on the observed data. Inclusion criteria included nurses, physiotherapists and physicians working in the reference ICUs for the care of COVID-19 patients who agreed to participate in the study. Other health care professionals working in ICUs were excluded. The selection of such professionals was based on their prolonged exposure to and continuous care of COVID-19 patients in ICUs.

Study Population

A randomized probabilistic sampling of a specific group of observations was used, ensuring the representativeness of the sample and allowing the generalization of the results to the target population studied. Sample calculation for a finite population (n>5%): $n = Z^2 \times P \times Q \times N \div e^2 \times (N-1) + Z^2 x P x Q$; where N represents the total population: Physicians = 60; Nurses = 66; Physiotherapists = 38. There was a sample loss of 35% for nurses, 25% for physiotherapists and 33% for physicians.

The study included 116 health care professionals, such as nurses, physiotherapists and physicians, working

in the ICUs of reference hospitals for the care of COVID-19 patients from January 2020 to July 2021. These hospitals are recognized as health care training centers in the cities of Juiz de Fora/MG and Vassouras/RJ.

Study Protocol

The inclusion criteria included nurses, physiotherapists, and physicians who worked in ICUs specializing in the treatment of COVID-19 and who were on the frontline of care for COVID-19 patients and who agreed to participate in the study. These were different from the other health care professionals who did not work on the frontline in ICUs.

Ethical Aspects

This was not a multicenter study. Invitations were sent to public hospitals with reference ICUs for COVID-19, located in a city in the *Zona da Mata* region of Minas Gerais state and in the Central-South region of Rio de Janeiro state, for co-participation in the study. Three ICUs in Minas Gerais and one in Rio de Janeiro accepted the invitation and signed consent forms that were included in the documents submitted to the Human Research Ethics Committee of *Universidade Severino Sombra* (CEP/USS) in Vassouras/RJ. The project was approved on April 26, 2021, according to report number 4.669.884. Data collection began after the participants signed an informed consent form, in compliance with Resolution 466/2012 of the National Health Council and its complementary provisions[15].

Data Collection and Organization

At the time the data collection instrument was developed[20-21], there were no models in the existing literature that could be validated for use in the study. Therefore, it was necessary to construct it based on authors who had used the KAP data collection model[12-19] in research on the COVID-19 pandemic.

The self-administered questionnaire included questions concerning demographic characteristics, education, professional experience and training in PART I; technical-scientific knowledge about COVID-19 in PART II; attitudes toward caring for COVID-19 patients in PART III; and practices performed in caring for those patients in PART IV. A three-point Likert scale was used for all knowledge, attitude and practice questions: "agree"/"disagree"/"no opinion". Each "agree" response was assigned a value of

1, and each "disagree" and "no-opinion" response was assigned a value of zero.

The questionnaire was developed in three stages: in the first stage, it was based on articles published on the KAP method used in research on COVID-19[12-19]. In the second stage, the questionnaire was evaluated by three health professionals with training and experience in the field of intensive care and experience in the care of patients with communicable diseases admitted to the ICU. In the third stage, after the evaluation by the professionals, the questionnaire was tested on 20 health care professionals who had not participated in the study, in order to allow adjustments to be made in terms of the appropriateness, objectivity and clarity of the questions and the time taken to complete them. Based on the results of the pre-test, questions about the modes of transmission of SARS-CoV-2 and risk groups were adjusted according to WHO guidelines[4].

The three independent variables of a KAP study are abbreviated in this report as: 'knowledge' (var.kno.), 'attitude' (var.att.) and 'practice' (var.pra.). The variable 'knowledge' shows the understanding of a certain topic (in this case COVID-19) by a certain community of people. 'Attitude' refers to feelings and preconceived ideas about the same topics. 'Practice' refers to the ways in which members of a community apply their knowledge and attitudes through concrete actions. Data were collected from May to June 2021.

Data Analysis

After administering the questionnaires, the data were processed by the SPSS Statistics 22.0 program. The data collection instrument had an internal reliability level of 76% (α=0.76, p<.001). Statistical analysis included Cronbach's alpha coefficient, Kaiser-Meyer-Olkin (KMO) coefficient, and Bartlett's sphericity test, as well as absolute frequencies, means and standard deviations (SD), and factor analysis (FA).

The ICUs were identified as ICU A, ICU B, ICU C, and ICU D. To facilitate the comparison of variables, a "maximum score index" (max. s. = 3) was created, represented by the percentage of all maximum correct scores on each scale.

RESULTS

The sociodemographic data in the study were as follows: study population (N) of 116 participants; 68.1% were females; 50.8% were 30-40 years old; 36.2% were nurses, 30.2% were physiotherapists and 33.6% were physicians; 79.4% worked in a single ICU, 60% of whom worked 40 hours per week.

Regarding training, 50% had a specialty in intensive care; 5% had a residency in cardiology; 10% had a residency in internal medicine; 5% had a residency in hospital medicine; 3% had a residency in adult health; 8% had a master's degree in community health; and 3% had a master's degree in rehabilitation sciences.

Concerning COVID-19 training, 69.8% of the professionals had participated in it in 2020 and 62%, in 2021, with a duration of 3 hours. The reliability of the questionnaire was assessed by analyzing its internal consistency using Cronbach's alpha coefficient (Table 1).

The ideal range of alpha values is considered to be between 0.7 and 0.9; mean ranges between 0.5 and 0.7 are considered adequate, and values below 0.5 are considered inadequate. The probability of error was set at 5%.

The internal reliability of the total KAP scale was 76% (Table 2). The reliability of the knowledge subscale was about 51.4%, the reliability of the attitudes subscale was about 50.0%, and the reliability of the practices subscale was 77.2%, the latter being considered quite reliable and the others relatively reliable.

In order to test the independent variables in this study, (i) knowledge (kno.), (ii) attitudes (att.) and (iii)

Table 1 – Alfa-Cronbach test for validation of the KAP-COVID-19 scale.

Cronbach Alpha	Standard Items	
	0.73	
0.76	6	7

practices (pra.), exploratory statistical calculations were used to assess: (i) the reliability and internal consistency of the measurement scales in this study, in which the Cronbach's alpha coefficient of the KAP scales was 0.76 (76%); (ii) the exploratory factor analysis, whose KMO coefficient showed a significance level of p<0.005 and (iii) Bartlett's test of sphericity (B=89.47; p<0.000) confirmed the adequacy of this analysis in detecting the main latent variables of the model used.

The most significant factor loadings (F > 0.50) were found in the attitudes subscale variables related to infection prevention and control: att.02 ("applying 70% alcohol to hands using the same method as soap and water", F = 0.72); att.04 ("changing gloves between sites on the same patient during caregiving", F = 0.70) and att.05 ("using 70% alcohol before approaching and leaving the patient's bed and before handling invasive devices", F = 0.74). However, a strong negative correlation (F = -0.70)

was observed in relation to variables pra.08 ("I propose strategies for family support", F = -0.85) and pra.09 ("I inform patients about their families", F = -0.80). These factors indicate a greater disagreement in the answers to the analyzed items.

The mean (M), SD and relative frequency (%) of correct answers to the questions on the KAP scale have the minimum number of correct answers required by the model equal to or greater than M = 2.1 (70%) and the maximum M = 3.00 (100%) (Table 4).

Table 2 – Correlation of subscale items (Alpha-Cronbach). Vassouras (RJ), Brazil, 2021.

Knowledge	M	Var.	Itens	CMC	Alpha
kno.01	20.23	1.73	0.22	0.17	0.70
kno.02	20.04	2.43	-0.07	0.01	0.70
kno.03	20.12	1.81	0.39	0.41	0.52
kno.04	20.04	2.29	0.20	0.10	0.65
kno.06	20.35	1.63	0.35	0.29	0.64
kno.07	20.11	1.67	0.56	0.65	0.62
kno.08	20.06	2.15	0.21	0.54	0.68
kno.09	20.13	2.04	0.28	0.19	0.63
Total	161.07	15.75	2.12	2.38	5.14
Attitudes					
att.01	22.15	1.41	0.01	0.09	0.60
att.02	22.26	1.27	0.04	0.09	0.60
att.03	22.15	1.43	-0.07	0.11	0.55
att.04	22.63	1.13	-0.01	0.07	0.50
att.05	22.29	1.12	0.15	0.28	0.52
att.06	23.05	1.28	-0.05	0.18	0.55
at.07	22.17	1.21	0.35	0.81	0.50
att.08	22.16	1.22	0.38	0.83	0.59
att.10	22.25	1.00	0.34	0.38	0.59
Total	201.10	11.07	1.14	2.83	5.00
Practices					
pra.01	25.11	7.29	0.26	0.72	0.80
pra.02	25.45	6.78	0.16	0.26	0.81
pra.03	25.42	6.29	0.31	0.25	0.79
pra.04	25.22	5.88	0.65	0.62	0.75
pra.05	25.16	6.05	0.77	0.91	0.75
pra.06	25.17	6.05	0.65	0.75	0.75
pra.07	25.20	5.71	0.78	0.85	0.74
pra.08	25.34	5.97	0.41	0.44	0.78
pra.09	25.63	5.55	0.41	0.32	0.79
pra.10	25.17	6.11	0.67	0.73	0.75
Total	252.87	61.68	5.08	5.85	7.72

Legend: kno. – knowledge; att. – attitudes, pra. – practices.

In the knowledge subscale, two variables stood out: kno.06 ("Risk groups for COVID-19"), with the lowest percentage of correct answers (89%), and kno.10 ("Use of protective equipment"), with 100% correct answers.

The total score for the knowledge subscale is seven percentage points lower than the scores for the attitudes and practices variables, respectively. In the attitudes subscale, variable att.09 ("I keep the use of safety measures to protect patients and health care workers from infection") stood out, with the highest mean number of correct responses (M = 2.99 or 99%).

In the practices subscale, variables pra.01 ("I perform hand hygiene before and after contact with patients and/or contaminated material, before putting on and taking off personal protective equipment (PPE)"), which received 98.3% correct answers, and variable pra.09 ("I inform patients about their relatives"), which was 17 percentage points below the previous index (81%), became evident

Data for each ICU regarding the rates for correct responses, number of discharges, and deaths are shown below (Table 5).

Table 3 – FA Correlation Matrix. Vassouras (RJ), Brazil, 2021.

Var	Factor 1	Factor2	Factor3
kno.06	0,70	-0,17	-0,24
att.02	0,72	0,09	-0,07
att.04	-0,07	0,70	0,25
att.05	0,10	0,74	-0,08
att.06	-0,12	-0,70	0,12
pra.03	0,70	0,20	-0,05
pra.08	0,00	0,04	-0,85
pra.09	0,32	-0,06	-0,85

Legend: kno. – knowledge; att. – atittude, pra. – practice.

In order to facilitate the comparison of the variables, a "maximum score index" (max. s. = 3) was created, which is represented by the percentage of all maximum correct scores on each scale.

During the study period, ICU A had 597 admissions, 524 discharges and 73 deaths. This ICU had the highest rate of discharges (M = 0.87) and the lowest rate of deaths (M = 0.12) between January 2020 and July 2021. A maximum score of 30% was achieved in the knowledge subscale, 20% in the attitudes subscale, and 60% in the practices subscale.

ICU B had 256 admissions, 184 discharges and 72 deaths, showing a discharge rate (M = 0.72) and twice as many deaths compared to ICU A (M = 0.27). The maximum scores obtained were 20% in the knowledge

subscale, 30% in the attitudes subscale and 10% in the practices subscale.

During the period analyzed, UTI C had 892 admissions, 644 discharges and 241 deaths. It presented discharge rates (M = 0.41) and death rates (M = 0.58), in addition to the highest maximum scores in the attitudes (60%) and practices (70%) subscales, and a low score in the knowledge subscale (20%).

UTI D had 292 admissions, with 121 discharges and 171 deaths, presenting a discharge rate (M = 0.43) and death rate (M = 0.56), with 40% in the knowledge subscale, 10% in the attitudes subscale and 40% in the practices subscale.

DISCUSSION

The results of this study suggest that the KAP method is an important planning tool, and that evaluation of health interventions is crucial. The data analyzed can be used for diagnostic purposes as they describe the knowledge, attitudes and practices of health care professionals in reference ICUs in caring for COVID-19 patients during the peak of the pandemic between 2020 and 2021.

Among the participants in this study, nurses were the largest health care professional group, with a predominance of women at the center of the fight against the pandemic[20]. The predominant age range of professionals was between 36 and 50 years (44%), suggesting extensive experience in treating critically ill patients.

Attitudes toward infection prevention and control protocols in health care settings were found to be highly variable. Several factors influence the acceptance of such protocols, including the involvement or not in their design and implementation, lack of training, access to and reliability in the use of PPE, as well as a lack of material resources and inadequate conditions in the physical facilities of ICUs[21]. These findings were corroborated by other studies, which also revealed misconceptions and low ratings among professionals regarding those protocols[13,14,22].

The prohibition on wearing watches during patient care was another point of major disagreement and had the lowest mean number of correct answers in the attitudes subscale. According to the National Health Surveillance Agency (ANVISA), watches are considered ornaments and therefore their use during patient care is

Table 4 - Absolute frequency, means and SD of the answers to the questionnaire. Vassouras (RJ), Brazil, 2021.

Knowledge										
	kno.01	kno.02	kno.03	kno.04	kno.05	kno.06	kno.07	kno.08	kno.09	kno.10	Correct Answers (%)
N	116	116	116	116	116	116	116	116	116	116	116
M	2.78	2.97	2.9	2.97	2.94	2.68	2.91	2.96	2.89	3	2.6
SD	0.59	0.18	0.4	0.16	0.3	0.54	0.39	0.28	0.32	0	3.16
Total											87%
Attitudes										
	att.01	att.02	ait.03	att.04	att.05	att.06	att.07	att.08	att.09	att.10	Correct Answers (%)
N	116	116	116	116	116	116	116	116	116	116	116
M	2.98	2.88	2.98	2.54	2.85	2.08	2.96	2.98	2.99	2.9	2.9
SD	0.13	0.35	0.13	0.55	0.4	0.44	0.24	0.19	0.09	0.38	0.38
Total											94%
Practices										
	pra.01	pra.02	pra.03	pra.04	pra.05	pra.06	pra.07	pra.08	pra.09	pra.10	Correct Answers (%)
N	116	116	116	116	116	116	116	116	116	116	116
M	0.98	2.67	2.68	2.88	2.95	2.93	2.91	2.73	2.45	2.93	2.82
SD	0.13	0.49	0.54	0.42	0.32	0.37	0.4	0.61	0.74	0.34	4.36
Total											6

Legend: kno. – knowledge; att. – attitude, pra. – practice.

Table 5 - Mean number of correct answers: variables x hospitals, discharges and deaths. Vassouras (RJ), Brazil, 2021.

Variables	kno.01	kno.02	kno.03	kno.04	kno.05	kno.06	kno.07	kno.08	kno.09	kno.10	Discharges	Deaths	max.s.
Hospital	M	M	M	M	M	**M**	**M**	M	M	M	M	M	%
ICU A	2.66	2.94	2.87	2.97	2.94	2.72	2.91	3	3	3	0.87	0.12	30
ICU B	**2.83**	**3**	**2.9**	**2.97**	**2.93**	2.62	2.92	2.95	2,8	3	0.72	0.27	20
ICU C	2.75	2.96	2.56	3	2.92	**2.83**	**3**	**3**	**3**	3	**0.43**	**0.56**	**40**
ICU D	2.83	2.92	2.45	3	3	**2.75**	**2.83**	2.83	2,92	3	0.41	**0.58**	**20**
Variables	att.01	att.02	att 03	att.04	att.05	att.06	att.07	att.08	att.09	att.10	Discharges	Deaths	max.s
Hospital	**M**	**M**	**M**	**M**	**M**	M	M	M	M	M	M	M	%
ICU A	2.97	2.94	3	2.69	2.84	2.06	2.94	**2.94**	3	2.91	0.87	0.12	20
ICU B	3	2.85	2.98	2.45	2.83	2.13	2.98	3	3	2.8	0.72	0.27	30
ICU C	2.92	2.92	2.92	2.75	2.92	2	2.83	3	2.9	2.9	0.43	0.56	10
ICU D	**3**	**2.83**	**3**	**2.4**	**2.9**	1.9	3	3	3	3	0.41	0.58	60
Variables	pra.01	pra.02	pra.03	pra.04	pra.05	**pra.06**	**pra.07**	**pra.08**	**pra.09**	pra.10	Discharges	Deaths	max.s.
Hospital	M	M	M	M	M	**M**	**M**	**M**	**M**	M	M	M	%
ICU A	3	2.69	2.78	3	3	3	3	2.84	2.5	3	0.87	0.12	60
ICU B	3	2.63	2.6	2.78	2.9	**2.87**	**2.82**	**2.67**	**2.47**	**2.87**	**0.72**	**0.27**	**10**
ICU C	2.9	2.8	2.7	2.9	3	**3**	**3**	**2.5**	**2.25**	**3**	**0.43**	**0.56**	**40**
ICU D	3	2.67	2.83	3	3	3	3	3	2.33	3	0.41	0.58	70

Legend: kno. – knowledge; att. – attitudes, pra. – practices.

prohibited[23]. As for family support and communication with patients, these were the aspects with the lowest scores in the practices subscale, and such disagreement may be related to the restrictions imposed by COVID-19[24].

Regarding the risk group for contracting COVID-19, a question that received the lowest number of correct answers in the knowledge subscale, it is inferred that the disagreement may be related to different publications on the disease, where there was no consensus, especially regarding contagion in children[25].

The low number of correct responses regarding attitudes and practices suggests that there is a lack of participation in refresher courses on this topic due to the overload of caregiving work and the lack of time to access article platforms with research results.

Given the clinical condition of the patients in the ICU, a multidisciplinary approach was necessary on the part of the team, in which the health professionals should be cohesive and guided by the responsibility of comprehensive patient care[26]. The formation of a team provides a better therapeutic plan, valuing collaboration as a means of achieving group care, with efficiency in the care provided, while at the same time giving visibility to the skills of each professional.

This study identified misconceptions and low knowledge, attitude, and practice scores among professionals caring for patients in ICUs. Professionals in ICU A were found to have low knowledge and attitude scores and moderate practice scores, as well as the highest number of discharges and lowest number of deaths among the units studied. O conhecimento inadequado e as atitudes incorretas dos profissionais podem levar a diagnósticos tardios[27]. Nesta UTI, a prática profissional possibilitou um cuidado adequado aos pacientes, o que levou a um menor número de óbitos.

On the other hand, ICU B professionals had low knowledge and practice scores and moderate attitude scores, with a moderate number of discharges and deaths. Higher attitude scores tend to favor the implementation of practices aimed at preventing transmission of COVID-19[27].

ICU C professionals achieved moderate scores in attitudes and practices, but low scores in knowledge, with a low number of discharges and a high number of deaths. The high scores in attitudes and practices, in contrast to the low scores in knowledge, suggest a strong correlation with the type of care provided to COVID-19 patients.

In ICU D, professionals had low scores for knowledge and very low scores for attitudes and practices, with a moderate number of discharges and deaths. Low attitudinal scores indicate difficulties in coping with the disease.

Knowledge makes it possible to develop prevention strategies to avoid the spread of the virus, while also facilitating the development of positive attitudes to acquire self-care habits at work, respect for the rights of patients

diagnosed with COVID-19, and recognition of the effectiveness of the treatment plan and coping behaviors[27]. Poor understanding of the disease among health care professionals can lead to late diagnosis and treatment, rapid spread of the disease, and inadequate infection control practices.

As for the limitations of this study, it is cross-sectional, which makes it impossible to infer causality, and it is not possible either to determine whether the KAP scores were directly responsible for better or worse care of COVID-19 patients in the ICUs studied. The sample was small in some ICUs in two cities. Generalization of the results to other ICUs in other regions should be made with caution.

CONCLUSION

In the statistical analysis of the KAP-COVID-19 questionnaire, important correlations were observed between the subjective variables (Knowledge, Attitudes and Practices) and the objective variables such as the respondents' profession, academic background, professional experience, position held and training. In addition, the ICUs of the hospitals participating in the study were evaluated in terms of the correlations between the number of admissions, discharges and deaths and the performance of their professionals on the three scales of the KAP method.

The existing, and probably differentiated, possibility for the participants in this study to have access to up-to-date, albeit provisional, information on COVID-19 may have contributed to the discrepancies in the responses related to the items of the knowledge subscale highlighted in the data collection instrument. In addition, it may have led to controversies in the conduct of the work process of health care professionals in these ICUs.

As for the variables of the attitude subscale, disagreements were identified that suggest relative flexibility in the application of care protocols for COVID-19 patients, which at the time were under construction due to incipient knowledge about the disease and its care and treatment.

The results of the practice subscale variables revealed inconsistencies in the implementation of technical procedures established in infection prevention and control protocols, which poses a risk of disease transmission to both ICU staff and patients.

The low level of knowledge, attitudes and practices regarding the care of COVID-19 patients may indicate a high level of vulnerability in health care. Although patient care takes place in interdisciplinary processes and interprofessional contexts, collaboration among different health professionals with different skills is still little explored in training, which can lead to conflicts in care delivery and professional performance.

Despite its limitations, this study has provided important information on the knowledge, attitudes and practices of health care professionals working in reference ICUs for COVID-19, thus contributing to the planning and development of patient care procedures and protocols, as well as to the management of critical care and the continuing education of health care professionals in these units.

Further studies are needed to determine the changes in the organization of critical care management and in the continuing education of professionals following the pandemic.

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