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Original Article

Nurses' knowledge about safety in the clinical management of patients with influenza: a cross-sectional study

Conhecimento de enfermeiros sobre a segurança no manejo clínico de pacientes com influenza: estudo transversal

Conocimientos del enfermero sobre seguridad en el manejo clínico de pacientes con influenza: estudio transversal

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ABSTRACT

Background and Objectives: to assess nurses' knowledge profile about the indications for the clinical management of *influenza*. **Methods:** descriptive cross-sectional study, carried out in October 2019. Sociodemographic and clinical variables were assessed of 53 nurses, compared using descriptive and univariate statistics. **Results:** nurses reported that returning to the health service to review the clinical condition is not an indication for the clinical management of patients with *influenza*-like syndrome (IS) with risk factors for complications (10; 19.0%). The indigenous population living in villages (3; 6.0%) and individuals under 19 years of age, in prolonged use of acetylsalicylic acid (36; 68.0%), are not/do not know that they are considered risk factors for complications. The use of symptomatic medications (5; 9.0%), the use of oseltamivir phosphate (16; 30.0%) and returning to the health service for review of the clinical condition (12; 23.0%) are not indications for the clinical management of patients with IS, without risk factors for complications, as well as the use of oxygen therapy, continuous monitoring and hospital admission if there are signs of worsening, including $SatO_2$ <95% (3; 6.0%), the use of oseltamivir phosphate (3; 6.0%), the performance of a radiological examination (1; 2.0%) and the control of hyperthermia with paracetamol (4; 7.0%) are not/do not know that they are indications for the clinical management of pregnant/postpartum women. **Conclusion:** nurses' knowledge is satisfactory, but there are doubts regarding the care of more specific patients, such as pregnant and postpartum women as well as the risk factors or conditions for complications.

Keywords: *Knowledge. Human Influenza. Nurse.*

RESUMO

Justificativa e Objetivos: avaliar o perfil de conhecimento de enfermeiros sobre as indicações para o manejo clínico da *influenza*. **Métodos:** estudo transversal descritivo, realizado em outubro de 2019. Foram avaliadas variáveis sociodemográficas e clínicas de 53 enfermeiros, comparadas através de estatística descritiva e univariada. **Resultados**: enfermeiros referiram que retornar ao serviço de saúde para revisão do quadro clínico não é uma indicação para o manejo clínico de pacientes com síndrome gripal (SG), com fatores de risco para complicações (10; 19,0%). População indígena aldeada (3; 6,0%) e indivíduos menores de 19 anos de idade, em uso prolongado de ácido acetilsalicílico (36; 68,0%), não são/não sabem que são considerados fatores de risco para complicações. O uso de medicamentos sintomáticos (5; 9,0%), o uso de fosfato de oseltamivir (16; 30,0%) e retornar ao serviço de saúde para revisão do quadro clínico (12; 23,0%) não são indicações para o manejo clínico do paciente com SG, sem fatores de risco para complicações, assim como o uso de oxigenoterapia, monitorização contínua e internação hospitalar se houver sinais de agravamento, incluindo $SatO_2$<95% (3; 6,0%), o uso de fosfato de oseltamivir (3; 6,0%), a realização de exame radiológico (1; 2,0%) e o controle de hipertermia com paracetamol (4; 7,0%) não são/não sabem que são indicações para o manejo clínico de gestantes/puérperas. **Conclusão**: o conhecimento dos enfermeiros é satisfatório, porém há dúvidas com relação ao cuidado de pacientes mais específicos, como grávidas e puérperas, bem como sobre os fatores ou condições de risco para complicações.

Descritores: *Conhecimento. Influenza Humana. Enfermeiro.*

RESUMEN

Justificación y Objetivos: evaluar el perfil de conocimiento de los enfermeros sobre las indicaciones para el manejo clínico de la *influenza*. **Métodos**: estudio descriptivo transversal, realizado en octubre de 2019. Variables sociodemográficas y clínicas. Fueron evaluados 53 enfermeros, comparados mediante estadística descriptiva y univariada. **Resultados:** los enfermeros informaron que regresar al servicio de salud para revisar el cuadro clínico no es una indicación para el manejo clínico de pacientes con síndrome gripal (SG), con factores de riesgo para complicaciones (10; 19,0%). La población indígena de las aldeas (3; 6,0%) y los individuos menores de 19 años, en uso prolongado de ácido acetilsalicílico (36; 68,0%), no saben/no saben que se consideran factores de riesgo de complicaciones. El uso de medicamentos sintomáticos (5; 9,0%), el uso de fosfato de oseltamivir (16; 30,0%) y el regreso al servicio de salud para revisar el cuadro clínico (12; 23,0%) no son indicaciones para el manejo clínico de pacientes con SG, sin factores de riesgo de complicaciones, así como el uso de oxigenoterapia, monitorización continua e ingreso hospitalario si existen signos de empeoramiento, incluyendo $SatO_2$<95% (3; 6,0%), el uso de fosfato de oseltamivir (3; 6,0%), la realización de exámenes radiológicos (1; 2,0%) y el control de la hipertermia con paracetamol (4; 7,0%) no son/no saben que son indicaciones para el manejo clínico de mujeres embarazadas/posparto. **Conclusión:** el conocimiento de las enfermeras es satisfactorio, sin embargo, existen dudas respecto de la atención de pacientes más específicos, como las mujeres embarazadas y puérperas, así como los factores o condiciones de riesgo para complicaciones.

Palabras Clave: *Conocimiento. Gripe humana. Enfermero.*

INTRODUCTION

Respiratory diseases are the second leading cause of hospital admissions and the third leading cause of death worldwide, affecting 10% to 20% of the world's population.[1] Among them, *influenza* is present with its complications and evolution to severe forms, being considered, in the ranking, the first in number of hospital admissions, causing deaths and high costs to health services.[2] And subtype A is responsible for the occurrence of most epidemics worldwide.[3]

Influenza is an acute viral infectious disease of the respiratory system, which is highly transmissible and globally distributed, and has a self-limiting course. However, when severe forms manifest, it causes rapid and fatal death, especially in individuals who present risk factors or conditions for complications from the infection.[3] The *influenza* virus, called *Myxovirus influenzae*, branches into types A, B and C, and only types A and B show clinical relevance in humans, being correlated with outbreaks and epidemics of respiratory origin.[4]

The most common complications of the *influenza* virus are *influenza*-like syndrome (IS), which consists of cases of people with fever, accompanied by cough and/or sore throat, with symptoms beginning in the last seven days, and severe acute respiratory syndrome (SARS), which is characterized by cases of people of any age, with IS, who present dyspnea or oxygen saturation (SpO_2) <95%, in room air, signs of respiratory distress and increased respiratory rate, according to age, and hypotension, in relation to frequent blood pressure, before the onset of symptoms.[3]

Surveillance of *influenza* and other respiratory viruses in Brazil consists of sentinel surveillance of IS and surveillance of SARS in hospitalized patients and deaths from SARS. Its objective is to monitor cases of IS due to respiratory viruses of public health importance in selected health units, called sentinel units, so that they serve as an early warning to the surveillance system.[5]

Worldwide, it is estimated that one billion cases of *influenza* occur annually, with three to five million cases of severe illness, with mortality ranging from 290,000 to 650,000 due to complications related to the disease.[6] In Brazil, in 2024, up to epidemiological week (EW) number 37, 61,124 cases of SARS were reported, with identification of respiratory viruses, 27% of which were *influenza* viruses, with 22% of deaths.[7] In Ceará, up to EW 15 of 2024, it is shown that the *influenza* A virus was detected in 1,631 (46.8%) samples. Of these, 275 (16.9%) were subtyped, with a predominance of H1N1 in 172 (62.5%). A total of 2,268 cases of SARS were also confirmed in the state.[8]

At a national level, care for patients with *influenza* must currently be provided in accordance with the *Influenza* Management and Treatment Guide, which aims to guide therapeutic conduct for *influenza*, as well as intra- and extra-hospital control measures.[5]

Knowing and assessing nurses' knowledge profile on the clinical management of patients with *influenza* will involve local, state and federal municipal managers, together with health professionals from each region of the country, to create ongoing and permanent educational strategies, through training on the use of *influenza* management and treatment guides, seeking to minimize errors resulting from unsafe care, as well as complications and injuries resulting from the disease. Thus, the study aims to assess nurses' knowledge profile regarding the indications for the clinical management of *influenza*.

METHODS

This is a descriptive cross-sectional study carried out in Basic Health Units (BHU), Emergency Care Unit, polyclinic and municipal hospital, located in the municipality of Quixadá, in the state of Ceará, with approximately 80,600 inhabitants. The report was guided by the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) statement.[9]

The study population consisted of 70 nurses, with the sample consisting of nurses working in the city's health services. Nurses who had been working for more than three months in these locations were included. Nurses who were on maternity leave, vacation or away from work for some other reason during the data collection period were excluded, totaling 53 nurses.

The data were collected in October 2019, using a questionnaire-type instrument, prepared based on the Ministry of Health's 2017 *Influenza* Treatment Protocol.[10] The questionnaire has 11 items.

To collect data, daily visits were made to services, from Monday to Friday, approaching nurses, before or after their care activities, without interfering in care routine. At this time, the purpose of the study and its objective were presented to participants, explaining the importance of the Informed Consent Form. After a participant signed, the questionnaire was given to the participant to complete.

The data were tabulated in a spreadsheet created in Microsoft Excel by the researcher himself, based on the variables in the questionnaire. They were then subjected to statistical analysis using EPI INFO 7.0, generating percentage frequencies, which were displayed in tables and later interpreted and discussed in conjunction with the bibliography on the subject.

The research was designed in compliance with the ethical aspects recommended in Resolutions 466/12 and 518/2018 of the Brazilian National Health Council, which regulate research with human beings, and was approved under Opinion 3,660,758 and Certificate of

Presentation for Ethical Consideration 23697019.7.0000.5046, on 10/24/2019.

RESULTS

The sociodemographic characterization of the 53 nurses participating in the research showed that the majority were women (49; 92.4%), aged between 31 and 59 years old (47; 88.8%), married/stable union (32; 60.0%), working at the BHU (18; 34.0%) (Table 1).

Table 1. Sociodemographic characterization of nurses in health services of Quixadá, Ceará. Quixadá, Ceará, Brazil, 2019.

Variables	N=53 (%)
Sex	
Male	04 (7.6)
Female	49 (92.4)
Age group	
18-30 years	05 (9.4)
31-59 years	47 (88.8)
>=60 years	01 (1.8)
Marital status	
Single	21 (40.0)
Married/stable union	32 (60.0)
Health service	
Basic Health Unit	18 (34.0)
Emergency Care Unit	16 (30.0)
Polyclinic	03 (6.0)
Municipal hospital	16 (30.0)

The analysis of the distribution of indications for the clinical management of patients with IS who present risk factors for complications revealed that all nurses demonstrated knowledge about the importance of the use of symptomatic medications, adequate hydration and oseltamivir phosphate, with 100% agreement on each of these measures (53; 100.0%). Furthermore, 81% of nurses (43) indicated the need to return to the health service to review patients' clinical condition, while 19% (10) did not mention this recommendation (Table 2).

Table 2. Distribution of indications for clinical management of patients with *influenza*-like illness, with risk factors for complications, according to nurses' knowledge. Quixadá, Ceará, Brazil, 2019.

Variables	N=53 (%)
Symptomatic medications	
Yes	53 (100.0)
Hydration	
Yes	53 (100.0)
No	
Does not know	
Oseltamivir phosphate	53 (100.0)
Yes	
Returning to the health service to review the clinical condition	
Yes	43 (81.0)
No	10 (19.0)

The distribution of conditions and risk factors for complications, according to nurses' knowledge, indicated unanimous agreement (53;100%) in several categories, including pregnant women at any gestational age, postpartum women up to two weeks postpartum, adults aged 60 or over, children under five years old and individuals with conditions such as lung diseases, tuberculosis, cardiovascular diseases, nephropathies, liver diseases, hematological diseases, metabolic disorders, neurological disorders, immunosuppression, neoplasms, HIV/Aids, among others, in addition to obesity.

A significant number of nurses (50;94%) also recognized the indigenous population living in villages or with difficult access as a risk group. However, a relevant portion (36;68%) is unaware that individuals under 19 years of age who are taking acetylsalicylic acid (ASA) for a long time are at risk of complications, which highlights an important gap in knowledge (Table 3).

Table 3. Distribution of condition(s) and risk factor(s) for *influenza* complications according to nurses' knowledge. Quixadá, Ceará, Brazil, 2019.

Variables	N=53 (%)
Pregnant women at any gestational age	53 (100.0)
Yes	
Women who have given birth up to two weeks after giving birth	53 (100.0)
Yes	
Adults ≥ 60 years	53 (100.0)
Yes	
Children <5 years	53 (100.0)
Yes	
Indigenous population living in villages or with difficult access	50 (94.0)
Yes	03 (6.0)
Does not know	
Individuals under 19 years of age using acetylsalicylic acid for a long time	11 (21.0)
Yes	36 (68.0)
No	06 (11.0)
Does not know	
Individuals with lung disease, tuberculosis of all forms, cardiovascular disease, nephropathy, liver disease, hematological diseases, metabolic disorders, neurological and developmental disorders that may compromise respiratory function or increase the risk of aspiration, immunosuppression associated with medications, neoplasms, HIV/AIDS or others, obesity	53 (100.0)
Yes	

In relation to the distribution of indications for clinical management of patients with IS, without risk factors for complications, the results were heterogeneous. All nurses reported the indication of hydration (53; 100.0%), while 48 (91.0%) mentioned the use of symptomatic medications, 36 (68.0%), the use of oseltamivir phosphate, and 41 (77.0%) advised returning to the health service to review the clinical condition (Table 4).

Table 4. Distribution of indications for clinical management of patients with *influenza*-like illness, without risk factors for complications, according to nurses' knowledge. Quixadá, Ceará, Brazil, 2019.

Variables	N=53 (%)
Symptomatic medications	48 (91.0)
Yes	05 (9.0)
No	
Hydration	53 (100.0)
Yes	
Oseltamivir phosphate	36 (68.0)
Yes	16 (30.0)
No	01 (2.0)
Does not know	
Returning to the health service to review the clinical condition	41 (77.0)
Yes	12 (23.0)
No	

The distribution of indications for the clinical management of pregnant and postpartum women, according to nurses' knowledge, identified that all refer to: complete physical examination with measurement of vital signs (53; 100.0%); observing warning signs in

pregnant women with respiratory rate values >20 rpm or heart rate >100 bpm% (53; 100.0%); and precautions with newborns in the postpartum period (53; 100.0%) (Table 5).

Table 5. Distribution of indications for clinical management of pregnant and postpartum women according to nurses' knowledge. Quixadá, Ceará, Brazil, 2019.

Variables	N=53 (%)
Complete physical examination with measurement of vital signs	
Yes	53 (100)
Observing warning signs in pregnant women with respiratory rate values >20 rpm or heart rate >100 bpm%	
Yes	53 (100)
Oxygen therapy, continuous monitoring and hospital admission if there are signs of worsening, including $SatO_2$<95%	
Yes	50 (94.0)
No	03 (6.0)
Oseltamivir phosphate	
Yes	49 (92.0)
No	01 (2.0)
Does not know	03 (6.0)
Radiological examination	
Yes	52 (98.0)
No	01 (2.0)
Controlling hyperthermia with paracetamol	
Yes	47 (89.0)
No	04 (7.0)
Does not know	02 (4.0)
Precautions for newborns in the postpartum period	
Yes	53 (100.0)

All nurses are aware of the indications for clinical management of patients with SARS, such as: hospital admission; intravenous hydration; oxygen therapy; maintaining clinical monitoring; measuring vital signs; oseltamivir phosphate; collecting respiratory secretion samples for laboratory testing; and indications for hospitalization of patients with *influenza* in the Intensive Care Unit (ICU), such as: persistent hemodynamic instability; signs and symptoms of respiratory failure, including hypoxemia requiring oxygen supplementation to maintain arterial oxygen saturation above 90%; and progression to other organ dysfunctions, such as acute renal failure and neurological dysfunction.

As for the problems and failures in implementing clinical management based on the 2017 *Influenza* Treatment Protocol, all reported a lack of training on the use of the protocol (53; 100.0%), and more than 50% reported a lack of knowledge about the disease (34; 64.0%), lack of knowledge about the protocol (37; 70.0%) and lack of training by the municipality (45; 85.0%).

DISCUSSION

The study describes the knowledge of 53 nurses about the indications for the clinical management of patients with *influenza*, a seasonal infection that causes significant morbidity and mortality and economic losses, worldwide and every year, requiring targeted and quality care for patients at different levels of care.[11]

Regarding the disease clinical management, it is known that all patients with IS and with conditions and risk factors for complications should be advised to return to the health service for a review of clinical condition, where they should be reassessed in relation to the criteria for SARS or other signs of worsening. It can be seen, therefore, that the professionals investigated had good knowledge regarding many care measures; in this item, however, the health team needs to know that the importance of returning to the health service to reassess the health status is an essential step in the clinical management of the disease of patients with IS and risk factors for complications.[5]

The study showed that, in the sample analyzed, there are nurses who are unaware that indigenous populations living in villages or with difficult access constitute one of the risk factors for complications from *influenza*. However, Ordinance 2,436 of September 21, 2017, which approves the Brazilian National Primary Care Policy, considers that it is a common responsibility of all members of teams working in Primary Health Care, such as nurses, to be responsible for monitoring the population involved, meeting the needs for preventive care and seeking comprehensiveness in the provision of services.[12-13]

Another variable that deserves attention, as it presented a result that differs from what is recommended in the literature, is that individuals under 19 years of age, in prolonged use of ASA, is also not a risk factor for complications from *influenza*. In this context, it is worth mentioning that, since 1980, the Food and Drug Administration and the Centers for Disease Control and Prevention recommend that aspirin should not be used to treat acute febrile viral illnesses in children and adolescents under 19 years of age, as its use may cause Reye's syndrome, which is a rare but life-threatening acute non-inflammatory encephalopathy with fatty liver failure.[14-15]

Regarding the indications for clinical management of patients with IS without risk factors for complications, a significant percentage of nurses report that the use of oseltamivir phosphate is not recommended. It is known that oseltamivir phosphate has extensive evidence supporting its safe and effective use in the treatment and prevention of *influenza* in older adults, including those with complicated infections or who reside in Nursing Homes, requiring only dose adjustments in renal patients.[16] Furthermore, its prescription, in addition to symptomatic medications and hydration, should be considered based on clinical judgment, preferably in the first 48 hours after the onset of the disease.[5]

During pregnancy, extending into the puerperal phase, physiological changes occur, including changes in cellular immunity, increased heart rate and systolic volume, and increased oxygen consumption, which leads to cautious care by nurses when pregnant and postpartum women are affected by *influenza*. It is a cause for concern that, in this study, some nurses reported not knowing important indications when

approaching this population.[17-18] However, ideally, these professionals, in their services, should promote efforts to improve vaccination coverage, through informative conversations with patients, which could protect mothers and their babies against serious respiratory diseases.[19]

Regarding the care of patients with *influenza* that progress to SARS, characterized by symptoms of high fever, cough and dyspnea, accompanied by increased respiratory rate, hypotension in relation to patients' usual blood pressure, and, often, lack of smell, taste and appetite, it is known that the recognition of these signs of severity by nurses is essential, in order to carry out the appropriate indications in the clinical management of these patients, as seen in the results of this research, as this is one of the most worrying manifestations among respiratory infections in humans.[5, 20]

Turning to indications for patients with *influenza* who should be admitted to the ICU, research, which sought to analyze a large cohort of patients hospitalized, in this context, for severe *influenza*, over ten years, showed that overall mortality was 25.1%. The predominant clinical presentation was specific lung involvement, which rapidly required mechanical ventilation and often progressed to acute respiratory distress syndrome. Therefore, timely admission to the ICU is recommended as early as possible in cases of respiratory failure in order to allow effective intensive care, which was known to all nurses working in the health services studied.[21]

Finally, regarding the problems and failures in implementing clinical management based on the 2017 *Influenza* Treatment Protocol, alarming data were found in the research regarding nurses' lack of knowledge about *influenza* and the protocol for managing it clinically, as well as the result of a study that sought to understand the dynamics of knowledge, attitudes and practices of health professionals related to *influenza*, suggesting political implications and advocating the review of national strategies to strengthen the training of health professionals on a disease that has been present in Brazil since the last century, and which has a large increase in the number of cases each year.[22]

Furthermore, the report of the municipality's lack of training on the disease and the use of the treatment protocol is quite concerning, considering that *influenza* continues to cause up to five million cases of serious illness resulting in 500,000 deaths worldwide.[23] However, in Brazil, the Brazilian National Policy for Continuing Education seeks to transform health work, with the aim of encouraging critical, reflective, committed and technically efficient action, and respect for regional characteristics and specific training needs of professionals working in health services, for the transformation of health practices towards meeting the fundamental principles of the Brazilian Health System, based on local reality and collective analysis of work processes. It is clear that it is the role of health managers and professionals to seek to improve health practices to the detriment of offering quality care.[24]

Finally, each year, changes in the viral involvement profile of different types of diseases may reflect the effect of different variants, which implies the relevance of knowledge by nurses as well as by all health professionals about the clinical management not only of *influenza*, but of several other viral infections, based on the recommendations of official guidelines and protocols of national and international government agencies, in order to offer safe care to patients.[25]

The study's limitations included the lack of availability and lack of interest of most professionals in answering the questionnaire, as many reported not feeling confident enough to answer, mainly due to a lack of knowledge about the protocol and even about the disease. Many nurses also stated that there were no cases of *influenza* in their services.

In conclusion, the study achieved its objective by assessing nurses' knowledge profile regarding the indications for clinical management of *influenza*. The results demonstrate that, although nurses have a good level of knowledge in most of the areas assessed, some important gaps were identified.

It is suggested that municipal health departments carry out more frequent training in relation to the entire context surrounding the disease, since it is a pathology that affects people worldwide every year.

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