

THE NURSE'S ACTION IN FRONT OF THE SUSPECT AND/OR CONFIRMATION OF MONKEYPOX DISEASE

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Abstract: Known in Brazil as monkeypox, the disease is a rare viral infection caused by Monkeypox (MPX), which is related to the human smallpox virus and the cowpox virus. The infection can happen through contact with animals that carry the virus (mainly rodents) and person-to-person transmission is possible, especially in close contact, with the possibility of sexual transmission also being considered. The contents of blisters can be particularly contagious, as can scabs from infected skin lesions. Thinking about these questions, and seeking to answer how the nurse must act in front of the patient with suspected and/or confirmed Monkeypox, the present study has the general objective of describing, through the literature, the nurse's performance during the care of patients with suspicion and/or confirmation of Monkeypox disease. Methodologically, an integrative review was carried out with works published between 2020 and 2022, demonstrating that, despite being an old disease, the cases registered in Brazil and in the world in the last three years made Monkeypox a very current and worrying pathogen. Thus, analyzing the origin, transmission, symptoms and treatment/prevention of Monkeypox ; differentiating this pathology from human smallpox (*Orthopoxvirus Simiae* x Smallpox) and varicella (chickenpox); and relating nursing care and attention in cases of suspicion and/or confirmation of the virus, it was seen that the role of nurses in this context is paramount. Not only to curb the spread of the virus through proper care in patient care and public awareness, but also to diagnose the pathogen, veto the dissemination of scientifically unproven information and promote vaccination.

Keywords: Nursing care; Nursing team; Monkeypox; Monkeypox virus.

INTRODUCTION

In recent times, much has been discussed about zoonoses, the set of diseases transmitted to humans through animals. Among them is Monkeypox, a viral zoonosis that has spread to several countries, becoming a worldwide concern.

Monkeypox, popularly known as Monkeypox, is a rare viral disease presented by the Pan American Health Organization (PAHO) – *Organización Panamericana de la Salud* (OPS) – as a pathology transmitted to humans, mainly by rodents and primates, but which can occur from person to person (close contact). It is caused by the *Orthopoxvirus virus. Simiae* (also called Monkeypox virus, MPXV) which has the same genus (*Orthopoxvirus*) and the same family (*Poxviridae*) as the human smallpox virus, which is *Smallpox*. The two viruses, despite producing similar symptoms, have distinctions in their structure, transmission, potential severity, lethality and the way they affect humans; and Monkeypox reaches other types of hosts. It must be noted, however, that human smallpox was considered eradicated by the World Health Organization (WHO) in 1980, after a worldwide vaccination campaign that took place between 1960 and 1970 (OPS, 2022).

It is important to highlight, according to Mauldin *et. al.* (2022), that MPXV remained on the African continent until 2003, when it was detected for the first time in humans. And in May 2022, when more than 20,000 cases of Monkeypox were identified, the WHO declared this outbreak a “Public Health Emergency of International Concern”, making recommendations to contain and control the plague. Scientists, seeking to understand where and when this massive outbreak began, have traced cases that occurred in Nigeria in 2017. This indicates that the virus has been transmitting between

people continuously in the African country for at least five years and has been spreading rapidly, worrying health authorities, as there is a possibility that the virus is spreading undetected, possibly through a new mechanism or route.

The Ministry of Health, through the Epidemiological Surveillance Secretariat, released on August 26, 2022 the Epidemiological Bulletin of Monkeypox nº 8, bringing the current scenario of the disease in the world. According to him, there are a total of 33,736 notifications of cases with laboratory confirmation, 179 suspects and 11 deaths (50% in Nigeria and only 9.09% in Brazil). New confirmed occurrences of Monkeypox were also disclosed through notification and WHO regions, demonstrating that most of them were identified in the America region. And, according to the survey by the Ministry of Health, until Epidemiological Week 32, there were a total of 10,195 reported cases of Monkeypox in Brazil, 3,040 (29.8%) of which were confirmed. An increase in the number of confirmed cases can be seen from July 2022, reaching a peak of 140 cases/day around the 17th, values that were repeated around August 2nd of the same year.

Overall, the symptoms of the disease are mild and usually disappear on their own. However, Mauldin *et. al.* (2022) warn that serious conditions can also occur, especially in children or people with weakened immune systems, requiring greater attention from health teams, especially with regard to the transmission of this pathogen. The most worrisome complications and sequelae had greater recurrence among people not immunized against common smallpox (eradicated in the 1970s), indicating that the vaccine against the *Smallpox virus* may be effective in preventing Monkeypox contamination.

With these points in mind, the present study has the following guiding question: How must the nurse act in front of the patient with suspected and/or confirmed Monkeypox?

In order to answer this question, the established general objective is to describe, through the literature, the role of the nurse during the care of patients with suspected and/or confirmed Monkeypox disease. The specific objectives to be achieved include: addressing the particularities of Monkeypox (origin, transmission, symptoms and treatment); differentiate this pathology from human smallpox (*Orthopoxvirus Simiae* x *Smallpox*) and varicella (chickenpox), which have similar symptoms; and list nursing care and attention in cases of suspicion and/or confirmation of the virus.

Thus, in the face of such a worrying spread of the pathogen and the need for nurses to act, when needing to deal with a patient with suspicion, or confirmation, of a disease that until recently was not common in the Brazilian reality, the present theme becomes relevant. It is imperative that professionals are prepared to apply the measures recommended by the World Health Organization to control, prevent and/or contain the risks of this outbreak. And as the impact on public health has been very intense, there is a need to promote knowledge about the virus, its causes, consequences, injuries, dissemination and forms of intervention.

METHODS

This study is an integrative review, a method that has the potential to contribute to the development of theory, as it has an approach that allows integrating empirical and theoretical studies, as well as synthesizing the results and deepening the understanding of a phenomenon. specific (cf CASARIN *et. al.*, 2020). Being better designed to define

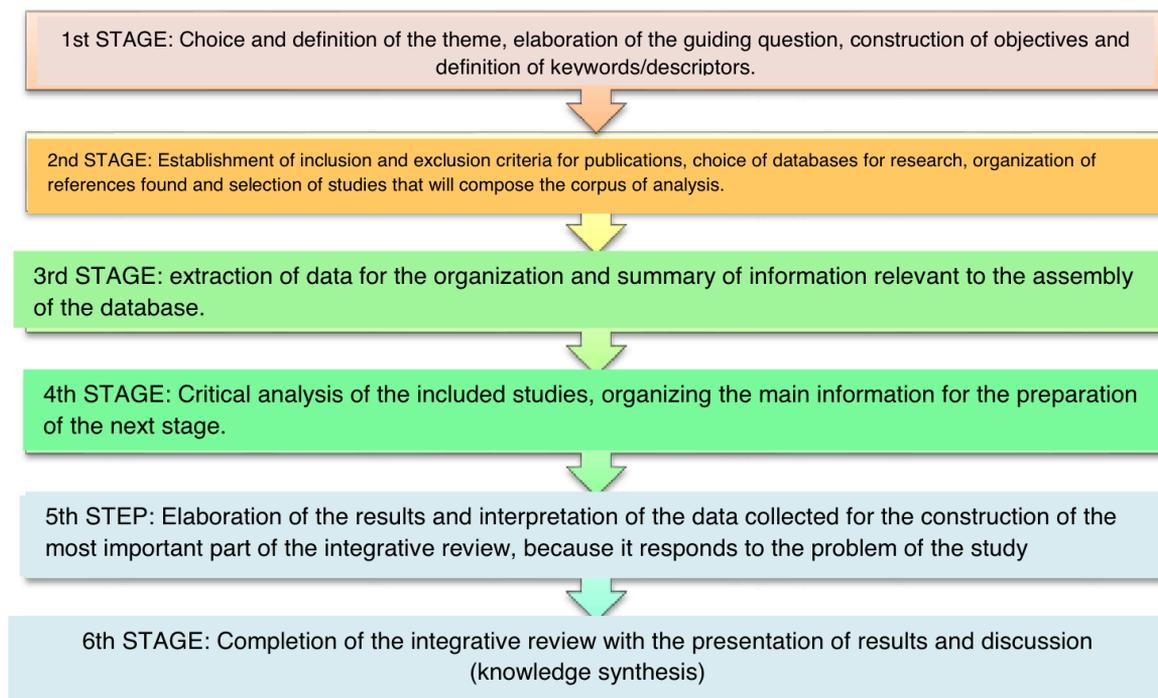


Figure 1: Steps of the integrative literature review.

Source: Prepared by the authors.

concepts, enable experimental and non-experimental research, review theories and review evidence; in addition to pointing out gaps in the literature. This work was elaborated aiming to promote a critical analysis of the chosen subject.

To carry out this integrative review, six steps were followed, recommended by Casarin *et. al.* (2020). Such steps are presented in the following flowchart, followed by their detailed descriptions.

In the first stage, the research theme was chosen, based on subjects of interest to the authors and discussion with the advisor, opting to analyze the nurse's performance in relation to Monkeypox. Subsequently, the context to be worked on was defined, as well as the determination of the guiding question, construction of objectives, in addition to the definition of keywords/descriptors.

In the second stage, the following inclusion criteria are instituted: articles in Portuguese, English and Spanish, published in the last five years; being free texts in their entirety and capable of responding to established problems. Integrative reviews and studies that were repeated in the database were not chosen for this review, based on the established exclusion criteria. The databases chosen for the research were SciELO – Scientific Electronic Library Online¹, the National Library of Medicine PubMed² and the Regional Portal of the Virtual Health Library – VHL³. In SciELO, using the inclusion and exclusion criteria, four articles were found; in PubMed ten works; and in VHL 21. After eliminating the review studies, those from the Medicines and Lactation Database (LactMed), the technical notes, the epidemiological bulletins and the

1. Website: <https://www.scielo.org/> Accessed in September 2022.

2. Website: <https://pubmed.ncbi.nlm.nih.gov/> Accessed September 2022.

3. Website: <https://bvsalud.org/> Accessed in September 2022.

treatment flow, the abstracts of the remaining works were read, to exclude those who did not fully respond to the guiding question.

Thus, analyzing the relevance for the construction of this review, 14 suitable works were chosen to compose the analysis corpus. Chart 1 shows the works used and some information about them, such as their respective authors, year and place of publication, type of study and main objective.

After choosing the works, the third stage began, consisting of data extraction, organization and summarization of information. For this, a file of the works was made, which subsidized the realization of the fourth stage, the critical analysis of the studies, organizing the main information. In this order, specific objectives were used in order to separate the data collected according to the proposed subtopics.

TITLE	AUTHOR(S)	YEAR	MAGAZINE	DATABASE/ METHODOLOGY	MAIN GOAL
Monkeypox: between precision public health and the risk of stigma	Álvaro Francisco Lopes de Sousa, Anderson Reis de Sousa and Inês Fronteira	2022	Brazilian Journal of Nursing	SciELO / Case study	To present Monkeypox as an endemic viral zoonosis that, even though it is not a sexually transmitted infection (STI), can spread through intimate contact during sexual intercourse, when there is an active rash.
metagenomic sequencing shotgun from the first case of monkeypox virus in Brazil	Ingra Morales Claro, et. al.	2022	Magazine of the Institute of Tropical Medicine of São Paulo	SciELO Study of metagenomic sequencing shotgun	To report an almost complete genome of the first confirmed case of MPXV in Brazil, with metagenomic sequencing Shotgun was completed in 18 hours from DNA extraction to consensus sequence generation.
Severe disseminated clinical presentation of monkeypox virus infection in an immunosuppressed patient: first death report in Brazil	Yargos Rodrigues Menezes and Alexandre Braga de Miranda	2022	Journal of the Brazilian Society of Tropical Medicine	SciELO / Case study	To report the case of a patient in Belo Horizonte, MG, with confirmed monkeypox virus infection with a severely disseminated clinical presentation, which differs from the description of existing cases in the current worldwide outbreak.

Monkeypox	Marlyn J. Moore, Balram Rathish, Farah Zahra	2022	Book published by StatPearls	PUBMED / Case study	To analyze whether smallpox eradication and subsequent lack of vaccination efforts paved the way for monkeypox to gain clinical relevance; and/or whether the suspicion of underreporting may translate into an underestimation of the potential threat of this pathogen.
Monkeypox Knowledge and Confidence in Diagnosis and Management with Assessment of Emerging Virus Infection Conspiracies among Healthcare Professionals in Kuwait	Mariam Alsanafi, Kholoud Al-Mahzoum, Malik Sallam	2022	Pathogens	PUBMED / Web-based cross-sectional survey of healthcare professionals in Kuwait. Using the Emerging Virus Infection Conspiracy Scale (EVICS)	To assess knowledge and confidence of health professionals' response (HMPX) in diagnosis and management among health professionals in Kuwait.
Monkeypox virus infections in southern Italy: is there a risk of community spread?	Daniela Loconsole et. al.	2022	International Journal of Environmental Research and Public Health	PUBMED / Case study based on clinical samples for each suspected case.	To describe the characteristics of MPXV infection identified in southern Italy.
Monkeypox outbreak in Spain: clinical and epidemiological findings in a prospective cross-sectional study of 185 cases	Alba Català, et. al.	2022	The British Journal of Dermatology	PUBMED / Prospective cross-sectional study in several medical facilities in Spain to describe cases of monkeypox in the 2022 outbreak.	Document the clinical and epidemiological features of monkeypox cases in the current outbreak.
Tecovirimat for the treatment of smallpox	Douglas W Grosenbach, et. al.	2022	New England Journal of Medicine (NEJM)	PUBMED / Investigative study and pharmacokinetic study	To investigate the efficacy of tecovirimat in non-human primate and rabbit models and to conduct a placebo-controlled pharmacokinetic and safety study involving 449 adult volunteers.
chromogenic immunohistochemistry of skin biomarkers in response to Monkeypox virus infection	Sood et. al.	2020	Viruses - Multidisciplinary Digital Publishing Institute (MDPI)	PUBMED / Case study	To evaluate the inflammatory skin lesions induced by the monkeypox virus using a multiplex immunofluorescence microscopy (MxIF) method

Epidemiological characteristics and control measures during the Monkeypox outbreak, Spain, June 2022	Berta Suárez Rodríguez et. al.	2022	Emerging infectious diseases	PUBMED / Epidemiological Research	Provide epidemiological characteristics of cases reported in Spain and the coordinated measures taken to respond to this outbreak.
Monkeypox – An emerging pandemic	Kunal M. Ajmera et. al.	2022	Science Direct	VHL / Case report of Monkeypox in a polygamous homosexual man with a mini literature review.	Find appropriate, evidence-based strategies to identify and treat the disease to interrupt secondary transmission
Genomic history of human monkeypox infections in the Central African Republic between 2001 and 2018	Nicolas Berthet et. al.	2021	Science Direct	VHL / Case study	To sequence the complete genome of 10 MPXV isolates collected during the CAR epidemics between 2001 and 2018, in order to determine their phylogenetic relationships among previously described MPXV lineages in Central and West Africa.
Demographic and clinical characteristics of confirmed cases of human smallpox virus in individuals attending a sexual health center in London, UK: an observational analysis	Kunal M. Ajmera et. al.	2022	Science Direct	VHL / observational analysis	To describe the demographic and clinical characteristics of patients diagnosed with monkeypox virus seen at a sexual health center.
The 2022 outbreak and the pathobiology of monkeypox virus	Narendra Kumar et. al.	2022	Science Direct	VHL / Case study	Present the list of exported cases in the context of the outbreak, identifying geographic and temporal trends, as well as possible links between cases to elucidate factors that may have contributed to the export of human cases of MPX from Africa.

Table 1 : List of works used in the integrative review.

Source : Prepared by the authors.

The fifth stage involved the elaboration of the results and the interpretation of the collected data, in order to build the discussion of the results, to answer the problem of the study. And, to finalize the integrative review, the sixth stage presents the results and discussion (knowledge synthesis), highlighting the limitations of the study, its contributions to the area and suggestions for further research. This step will be described in the subsequent chapter.

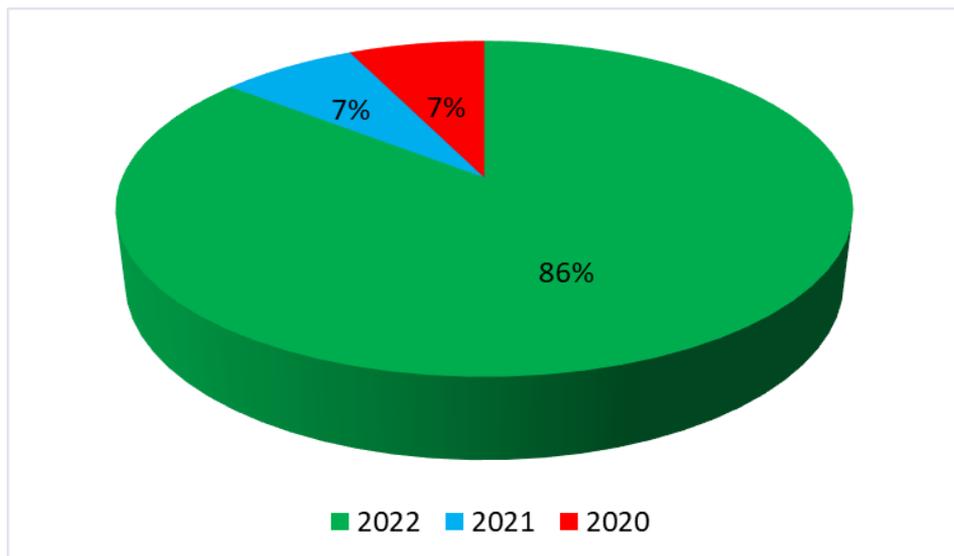
RESULTS AND DISCUSSION

It is necessary to point out that, as shown in the graph below, most of the works used in this review were published in the year 2022, with only two from previous years (2020 and 2021). This data reveals that, despite being an old disease, the subject is current and has been portrayed in several countries, with different contexts; which shows the relevance of this study.

In turn, Chart 2 reveals the types of study of the articles used, the journal's classification and the level of evidence, which is an indication of the quality of the scientific

evidence available and a way of measuring whether the information presented is reliable. Publications were explored at four levels. There is the level 1, whose evidence comes from systematic review, meta-analysis, randomized controlled clinical trials or from clinical guidelines; Level 2 works, which are research derived from at least one well-designed randomized controlled clinical trial. There is also level 3, evidence obtained from well-designed clinical trials without randomization; and, finally, level 4, whose evidence comes from well-designed cohort and case-control studies. Level 5, 6 and 7 papers were not included, which denotes the scientific quality of the study (BRAZIL, 2014).

In general, it is possible to verify that the publications were chosen considering not only their relevance to the study, but also the scientific quality of the journal in which they were published. The above facts confirm the quality and updating of this study. Then follows the analysis and conclusions obtained after reading the previous works.



Graph 1: Years of publications used in the integrative review.

Source: Prepared by the authors.

AUTHOR(S)	KIND OF STUDY	LEVEL OF EVIDENCE	PLACE OF PUBLICATION / QUALIS CLASSIFICATION
Sousa, Sousa and Border (2022)	Observational epidemiological study	Level 4	Brazilian Journal of Nursing / B3
Of course, et. al. (2022)	Study of metagenomic sequencing shotgun	Level 3	Magazine of the Institute of Tropical Medicine of São Paulo / B3
Menezes and Miranda (2022)	Study with design without randomization	Level 3	Journal of the Brazilian Society of Tropical Medicine / B3
Moore, Rathish and Zahra (2022)	Case study with correlational descriptive research	Level 4	StatPearls Publishing / B2
Alsanafi, Al-Mahzoum and Sallam (2022)	Cross-sectional web-based survey of health professionals in Kuwait. Using the Emerging Virus Infection Conspiracy Scale (EVICS)	Level 2	PLOS Pathogens / A2
Loconsole et. al. (2022)	Case study prepared using clinical samples for each suspected case.	Level 3	International Journal of Environmental Research and Public Health/ B2
Català, et. al. (2022)	Prospective cross-sectional study in several medical facilities in Spain	Level 1	British Journal of Dermatology (BJD) / A2
Grosenbach, et. al. (2022)	random randomized trial	Level 2	The New England Journal of Medicine. NEJM / A2
Sood et. al. (2020)	Comparative study	Level 3	Viruses / A3
Rodríguez et. al. (2022)	Epidemiological survey of reported cases in Spain	Level 3	Emergency infect Dis . / B2
Ajmera et. al. (2022)	Monkeypox case report	Level 3	Elsevier journals / B2
Berthet et. al. (2021)	Study focused on sequencing the complete genome of 10 isolated cases of MPXV collected during the CAR epidemics between 2001 and 2018	Level 2	Scientific Reports / A2
Girometti, et al. al. (2022)	observational analysis	Level 4	Lancet Infectious Diseases / B2
Kumar et. al. (2022)	Analysis of the pathobiology of the monkeypox virus	Level 3	Journal of Autoimmunity / A2

Table 2 : Quality of publications.

Source: Prepared by the authors.

MONKEYPOX: ORIGIN, TRANSMISSION, SYMPTOMS, TREATMENT AND PREVENTION

Origin and transmission

According to Gironetti *et. al.* (2022) Monkeypox is a rare viral disease transmitted to humans mainly by rodents. Person-to-person transmission is also possible, particularly in close contact. Caused by the *Orthopoxvirus virus simiae* of the *Poxviridae* family and of the genus *Orthopoxvirus*, Monkeypoxviruses are related to *human classics poxviruses* (human smallpox) and *cowpox viruses* (genuine cowpox). Monkeypox is now widespread in West and Central Africa.

Sousa, Sousa and Fronteira (2022) corroborate with Gironetti *et. al.* (2022) stating that the *Orthopoxvirus virus simiae* is found mainly in rodents; and despite its name, monkeypox is rare in these animals. As humans can become infected and sick in areas where monkeypox is widespread (endemic), Alsanafi, Al- Mahzoum and Sallam (2022) warn that contamination in humans occurs mainly through contact with infected animals or their excrement, in addition to consumption of insufficiently heated meat from contaminated animals.

This disease was first reported in 1958 among laboratory monkeys. The first confirmed human case was in 1970, when the virus was isolated from a nine-year-old child in the Democratic Republic of Congo (DRC). Sood *et. al.* (2022) reported that monkeypox was detected outside the African continent in spring 2003, caused by importation of rodents from Ghana to the US; the disease was transmitted to dealers and pet owners through infected prairie dogs. There were no human-to-human transmissions at the time, presumably because it was a less virulent – i.e. disease-causing – variant of the West African virus.

Menezes and Miranda (2022) state that only a few occurrences of smallpox, especially those imported from Nigeria, were detected outside the African continent until the spring of 2022. Some cases are in Great Britain (in the years 2018, 2019, 2021, 2022), in the US (in 2021), Singapore (in 2019) and Israel (in 2018). However, since May 2022, cases without travel settlements to endemic areas have been reported in several countries outside Africa; in these, in particular, those affected had not traveled to African countries where the virus is endemic, as in previous situations. Apparently, many transmissions occurred in the context of sexual activity.

As the outbreak seems to be spreading mainly among men who have sex with men (MSM), Moore, Rathish and Zahra (2022) claim that the statements by Menezes and Miranda (2022) are true, since the first scientific discoveries suggest the possibility that Monkeypox is transmitted sexually, mainly in the MSM community – causing racist and homophobic connotations.

Regarding this particular form of transmission, Alsanafi, Al- Mahzoum and Sallam (2022) explain that the fact that the eruptions caused by monkeypox are located, in some cases, in the genital area and that the disease is found particularly – but not exclusively – in men who have sexual intercourse with men, points to transmission during sexual contact. Based on the European Center for Disease Prevention and Control (ECDC) assessment, people with multiple sexual partners in Europe (including some groups of MSM) are thought to be more likely to spread the virus. Because the condition usually goes away on its own, the overall risk is considered moderate for people with multiple sexual partners and low for the general population.

In contrast, Kumar *et. al.* (2022), do not consider it possible to confirm that

Monkeypox is sexually transmitted and portray that this form of disease diffusion remains an enigma for the clinical-virologist area. The authors point out that, although many cases have been detected among homosexuals, further studies are needed to prove that transmission did not occur by other means such as kissing, hugging, contact with injured skin or body fluids, such as pus, blood and saliva of the sick person, the most common means of transmission of the pathogen.

Symptoms

The first symptoms appear about 5 to 21 days after infection. Infected people can transmit the disease as long as they show signs of the pathogen, which last from two to four weeks . As newborns, children, pregnant women, the elderly and people with immunodeficiency are particularly at risk of developing the disease, Moore, Rathish and Zahra (2022) explain that isolation is usually requested for people with proven infection by this virus for whom the drug Tecovirimat is approved for the targeted treatment of the disease.

According to Rodriguez *et. al.* (2022) the illness is often, but not always, initiated or accompanied by general symptoms such as fever, headache, muscle and back pain, swollen lymph nodes, chills, or exhaustion. However, some people do not have general symptoms of the disease. The main features are the skin changes, sometimes very painful, which go through the phases of the spot to the pustule (macula, papule, vesicle and pustule) and, finally, present crust and desquamation. The rash can appear in the genital or anal area, but also in other places, such as the hands, feet, chest or face. Changes to the skin and mucous membranes can also be found in the mouth and eyes.

Catalan *et. al.* (2022) also add that skin changes usually last between two and four weeks and heal on their own without treatment, although scarring may occur. Complications from bacterial superinfection of skin lesions are possible, and manipulation of lesions, such as scratching or piercing, can increase both the risk of superinfection and transmissibility. Complications in endemic countries include encephalitis, bacterial skin infections, dehydration, conjunctivitis, and pneumonia. The serious consequences of the disease are disfiguring scarring and permanent damage to the cornea, including loss of vision.

WHO data, presented by Ajmera *et. al.* (2022), point out that about 3-6% of cases reported in recent years in Central and West Africa resulted in death. In view of underreporting (particularly in the lighter ones), the overall mortality rate was probably lower. Fatal cases, of up to 11%, have been seen in children under 16 infected with the more virulent variant of the Central African virus in previous outbreaks. And the West African variant appears to be associated with significantly lower mortality.

Treatment and prevention

Rodriguez *et. al.* (2022) warn that, after contact with infected people, the local health department must be contacted as soon as possible so that all necessary care is taken. At that moment, a preventive treatment must be started, using the Jynneos / Imvanex vaccine, *approved by* Anvisa to be used in Brazil, with no need to register, as an immunizer against Monkeypox. The vaccine is intended for adults aged 18 years and over and is indicated both for people who have had close contact with an infected person or the pathogen (post-exposure prophylaxis) and for individuals who have an increased risk of becoming infected by contact with

someone with the disease, or with infectious laboratory specimens.

If signs of infection appear, including non-specific symptoms, contact with others must be avoided and a physician must be contacted. Alsanafi, Al- Mahzoum and Sallam (2022) warn that the team of professionals who will provide care must be informed in advance about the suspected contaminated patient; preferably by telephone, but if this is not possible, the notice must be given immediately upon arrival at the location.

Although most people recover from the infection on their own within a few weeks, Gironetti *et. al.* (2022) highlight that immunization is recommended in the following cases:

- Close physical contact through non-intact skin or mucous membranes (eg, sexual intercourse) with an infected person;
- Unprotected prolonged contact in conversation situations at a distance of less than one meter (such as domestic contacts);
- Close contact in medical care, without sufficient personal protective equipment (gloves, FFP2 mask/medical mouth and nose protection and protective apron) with a person suffering from the disease, their body fluids or contaminated, possibly infectious material (e.g. clothing or bedding worn by such persons);
- Unprotected accidental contact by laboratory personnel with laboratory specimens containing non-inactivated monkeypox material, especially when virus enrichment is performed in cell cultures.

Moore, Rathish and Zahra (2022) emphasize that the first vaccination must

be given as soon as possible within a period of up to 14 days after contact, but only as long as the person does not show signs of illness. In turn, precautionary immunization (without direct contact with a contaminated individual) is only indicated for people at increased risk of contact, exposure and infection, such as during an outbreak of the virus, for example.

It is important to mention that basic immunization consists of two vaccine doses with a minimum interval of 28 days. The first dose already provides good protection against Monkeypox. The second dose serves, in particular, to prolong the duration of the vaccine's protection, which indicates that one dose of the vaccine is sufficient for people who have already been vaccinated against smallpox. However, people with immunodeficiency exposed to the pathogen must receive two booster doses, even if they have previously been vaccinated against the disease. Even though the 28-day interval has been exceeded, Claro *et. al.* (2022) state that the vaccination series does not need to be restarted.

In addition to the vaccine, it is important to promote the treatment of symptoms. For the treatment of wounds, Sood *et. al.* (2022) prescribe that they be cleaned with boiled water and/or antiseptic, and that oral lesions be washed with salt water. Warm baths with baking soda and magnesium sulfate also have the potential to help with sores on the body. Healing ointments such as Hypoglos and Nebacetin can be prescribed and the antiviral Tecovirimat is indicated for patients at risk of developing severe forms of the disease. For fever and pain, pain relievers can be used to alleviate these symptoms.

Since during sexual contact, the probability of transmitting monkeypox increases significantly, Berthet *et. al.* (2021) understand that individuals can decrease the

risk of contracting Monkeypox by reducing the number of sexual partners. Rashes or sores must not be touched. Places where little or no clothing is worn and physical contact occurs, such as darkrooms, saunas or clubs, are also more likely to harbor infection. Condoms can reduce the chances of infection by avoiding direct contact with mucous membrane lesions, especially in the anus or vagina. But it is important to emphasize that condoms have the ability to reduce, but not eliminate the possibility of transmission, since this occurs through touching the smallpox rash, regardless of the location of the body.

It is for this reason that, according to Grosenbach, *et. al.* (2022), it is recommended that people infected with the virus refrain from any form of sex (oral, anal, vaginal) while there is a risk of transmission. And, after healing of all changes in the skin and mucous membranes, the condom must be used during sexual intercourse for eight weeks, as the virus can still be present in the semen (there is scientific evidence that the reproductive virus can contaminate the semen).

MONKEYPOX X HUMAN SMALLPOX X CHICKENPOX (CHICKENPOX)

With a sudden increase in Monkeypox cases, Grosenbach *et. al.* (2022) mention that there are many concerns about the potential for spreading the virus and how to detect and/or differentiate it. The reason for this is that the smallpox rash resembles other, more typical, infectious rashes in appearance, due to which patients are in doubt, are they: human smallpox, chickenpox (chicken pox) or some other similar rash. In addition, the monkeypox rash can also look similar to more common infectious rashes such as those seen in secondary syphilis, herpes simplex infection and varicella-zoster virus infection,

diagnosis and analysis of symptoms are very important to avoid. underreporting, incorrect treatments and even a lack of care on the part of the infected themselves and the nursing team.

To make this distinction, it is important to note that the chickenpox virus (*Varicella zoster*) has existed for much longer than humans, with a probable emergence 70 million years ago, around the time the dinosaurs became extinct. ajmera *et. al.* (2022) report that, despite being considered a childhood disease that decades ago was contracted by almost all children, the pathogen remains in the body and can reappear in non-immunized adults years later, as herpes zoster. A vaccination campaign that began in the 1990s made the disease rare in children, and today, as most people are vaccinated with the tetravalent or tetravalent viral vaccine as part of routine childhood immunizations, it is understood that few individuals who contract chickenpox and present its itchy blisters - the main characteristic of this disease.

In turn, human smallpox first infected people around the time of early agricultural settlements, about 12,000 years ago. In the Old World, the virus killed approximately 30% of its victims, while blinding and disfiguring many others. But the effects were even worse in America, as citizens were exposed to the virus with the arrival of Spanish and Portuguese conquerors (2021) report that in 1796, the English physician Edward Jenner, seeking solutions, performed an experiment that, in a timely manner, caused the virus to fall, leading to the development of the world's first successful vaccine. Other benefits also emerged, such as: vaccinated individuals could not spread the pathogen to others, the immunizer rarely left a rash and was fatal only in the rarest of circumstances.

As the vaccine originally had to be transferred from arm to arm, its use spread

slowly. It was also much less effective in tropical countries, where the heat caused it to deteriorate quickly. However, Loconsole *et. al.* (2022) mention that two technological advances – a lyophilized, heat-stable vaccine and the bifurcated needle – led the WHO to launch a global immunization campaign in 1967, with the aim of eliminating smallpox once and for all. A decade later, the number has dropped to zero. No one has naturally contracted the virus since a Somali hospital worker in 1977 (although a laboratory accident in England killed one person in 1978); after searching for remaining traces, World Health Organization member states passed a resolution on May 8, 1980, declaring the disease eradicated.

In contrast to human smallpox, which has been eradicated since 1980, Claro *et. al.* (2022) report that monkeypox is generally much milder, being a disease that commonly cures itself and from which most people recover in a few weeks. Overall, the prognosis can be classified as favorable, although some affected people may also experience severe and even fatal courses.

Since it was first identified in a monkey colony in Copenhagen in 1958, monkeypox has been largely ignored in the western world, probably because it is so similar to other diseases. However, Loconsole *et. al.* (2022) mention that human cases of smallpox have been reported in West and Central African countries, including Nigeria, Cameroon, Democratic Republic of Congo, Republic of Congo and other countries in the region. Central African virus variants are significantly more virulent than West African virus variants, however, there are still doubts that cases were and/or are diagnosed properly, as this depends significantly on the availability and quality of laboratory tests.

Several authors state that, in general, the three diseases have the following symptoms:

fever, chills, muscle aches, headache, swelling of the skin and rashes. In addition, they are viruses that have extraordinary resistance and greater temperature tolerance, strongly impacting their environmental persistence. They are transmitted through direct contact with the body fluids or wounds of the infected person, items such as clothes or sheets that came into contact with these liquids or wounds, and by respiratory droplets when the patient is very close to an uninfected individual. On the other hand, analyzing the information presented by Sood *et. al.* (2020), Giroetti *et. al.* (2022), Loconsole *et. al.* (2022) and Moore, Rathish and Zahra (2022), the differences between them are given in the following points:

1. Contaminating viruses. Monkey pox is *Monkeypox*, chickenpox is *varicella-zoster*, and human smallpox is *smallpox*;
2. The degree of infectivity. Monkeypox is less contagious than chickenpox and human smallpox, and its symptoms are milder.
3. The way bubbles pop. In Monkeypox all bubbles are born at once and are similar; in human smallpox, the lesions begin as macules (no relief), then become papules (solid elevation), and only then do they transform into pustules (bubbles filled with pus). In chickenpox, blisters do not have a pattern and appear at different times of the infection, with waves of blisters at all stages of the disease.
4. Fever, malaise, headache and occasionally sore throat, cough and swollen lymph nodes are the typical symptoms of the first stage of Monkeypox . All these symptoms can appear 4-5 days before the lesions and rashes. In chickenpox, the rash appears 1 to 2 days after the fever. In human smallpox there was a 2 to 3 day prodrome,

and it was only after the appearance of flu-like symptoms that reddish spots and maculopapular lesions began to appear on the body.

5. Lymph nodes affected by Monkeypox swell. In human smallpox, oropharyngeal lesions rapidly ulcerate, but this does not usually occur in chickenpox.

6. Monkeypox takes between 5 and 21 days to hatch, while chicken pox takes between four and seven days. In human smallpox, the incubation period is usually longer, ranging from 7 to 17 days.

7. Compared to chickenpox and smallpox, Monkeypox lesions are larger.

8. Chickenpox can lead to an itchy, blister-like rash that typically starts on the face, back, and chest before spreading throughout the body. Monkeypox lesions are large, firm, non-itchy, painful, pus-filled papules and the patient will notice lesions on the face, palms and soles of the feet.

9. In the case of monkeypox, contact with the sick person, animal or any object, such as belongings of the infected person, must be avoided, and vaccination may or may not be recommended. However, for chicken pox and smallpox, immunization is required to prevent infection.

Despite these differences, Loconsole *et al.* (2022) report that it is very difficult to distinguish these diseases just by analyzing the symptoms and aspects of the patient. Therefore, the diagnosis of monkeypox must be made by an infectologist or general practitioner, through the evaluation of the health history, symptoms presented and RT-PCR examination, which is performed with a sample of the secretion of the wound or crust of the wound. Only through this test is it possible to confirm the presence of the virus

responsible for the disease.

Thus, one can see the importance of properly analyzing the symptoms, seeking medical assistance and carrying out the tests, which are key issues to properly identify the pathogen.

NURSING CARE AND ATTENTION IN CASES OF SUSPICION AND/OR CONFIRMATION OF THE VIRUS

As mentioned initially, World Health Organization in 2022 declared monkeypox an international outbreak, making recommendations to contain and control the pathogen. The measures recommended by the Organization, according to Claro *et al.* (2022) include isolating and treating sick people, tracing contact persons, and vaccinating people at increased risk of exposure and infection, accompanied by targeted risk communication involving relevant stakeholders and communities.

On the front lines of healthcare, nurses play a central role in responding to this health emergency, particularly through education about infection prevention and control, as well as protecting against stigma and discrimination. Therefore, Rodriguez *et al.* (2022) point out that it is of paramount importance that nurses, and other health professionals, demand access to equipment and materials to protect them from exposure and limit the spread of the virus. They must also have access to up-to-date information on modes of transmission, prevention, diagnosis, treatment, infection control procedures, counseling and care, through in-service education or continuing education.

In this sense, Alsanafi, Al-Mahzoum and Sallam (2022) warn that, in the hospital environment, care needs to be intensified and the professionals involved (among which nurses stand out) need to take all precautions regarding safety equipment, hand washing,

cleaning of environments and disinfection of materials. Bearing in mind that the incubation period for Monkeypox ranges from 5 to 21 days; the illness usually lasts from two to four weeks; the infectious period lasts until all scabs have fallen off, although it may last longer for some individuals; and modes of transmission include respiratory secretions, secretions from blisters and wounds, and contact with contaminated objects.

Loconsole *et. al.* (2022) describe that, once in the hospital, the patient must be properly welcomed in the so-called 'triage' stage and have their complaints properly heard. This reception must be carried out by a specialized nursing team prepared to deal with the possibility and confirmation of the disease, which is capable of assessing the patient's condition, providing first aid and determining the speed with which the treatment needs to be administered. Therefore, it is necessary for the nurse to be able to organize the information collected and initiate non-invasive hemodynamic, respiratory, neurological monitoring and identification of vital signs, which are procedures required both on arrival at the health facility and in carrying out admission exams, as medical request.

Therefore, Sood *et. al.* (2022) state that the nurses responsible for triage must be able to receive the patient and perform all the care (verification of signs, anamnesis, physical examination, identification of invasive devices, etc.) using Personal Protective Equipment (PPE) and following the institution's safety standards, which are based on the six International Patient Safety Goals. Depending on the results obtained in the triage, the patient admitted in spontaneous demand, or brought by an ambulance, must be sent to an isolated place, with the necessary precautions for contact and droplets. Skin lesions that are in exposed

areas must be adequately protected by the nursing team, either by a sheet, clothing or apron with long sleeves; and notification to epidemiological surveillance must be carried out quickly.

As the treatment of the disease is mainly focused on alleviating the symptoms, as there is no treatment available to cure the infection, Català *et. al.* (2022) they agree with the aforementioned authors and add that all suspected or confirmed patients must be immediately placed in isolation rooms; healthcare workers must have the highest level of PPE when caring for these patients (powered air purifier and respirator, viral penetration impermeable coveralls that incorporate head and shoe coverings, and gloves); and the monkeypox response must be carried out efficiently and effectively. All this in order to avoid significant underreporting, testing bottlenecks and concerns that the pathogen may take up residence in locations where vaccination is not widespread, making outbreaks more frequent and potentially creating new variants.

The big problem is that not all hospitals are able to do all of this, mainly due to lack of funds (2022) list the minimum PPE necessary for doctors and nurses to be able to deal with patients with suspected or confirmed disease. These are a tested single use N95 respirator, isolation gown, goggles and gloves. There must also be strict procedures for putting on and removing PPE when entering and leaving the isolation room, as monkeypox virus can be resuspended in aerosols when contaminated objects (bedding, clothing, PPE and the like) are shaken or moved; Monkeypox particles retain infectivity in aerosols for 18 to 90 hours.

Rodriguez *et. al.* (2022) agree with this when they state that cleaning protocols must be observed after each removal of PPE designed to be reused (such as respirators).

They say that tight control of patient transport and movement of staff around the facility must also be implemented to prevent transmission or contamination of monkeypox. Because vaccination after exposure to the virus can also help lessen the severity of symptoms, it is imperative that patients and health care workers be immunized, as the CDC recommends vaccinating against smallpox in people who have been, or are likely to be, exposed to the pathogen, with special emphasis on immunocompromised individuals.

Raising the issue of monkeypox as a global health emergency and drawing attention to the risk of contamination among nurses who care for those infected with monkeypox, Alsanafi, Al- Mahzoum and Sallam (2022) address that lack of access lack of adequate information is just as worrying as the lack of professional training and guidance along with PPE. And as the virus is changing and finding ways to infect more people, it is understood that healthcare professionals must be on the lookout for any unexplained rashes, suspicion of or exposure to someone testing positive, and all scientifically proven information about the virus. illness. With the change in this virus, it is necessary not only more immunizing doses to cover a larger portion of the population and less exposure, reducing movement from one host to another, but also the dissemination of accurate data and knowledge.

Therefore, it is urged that national nursing associations actively participate in public awareness and education about Monkeypox . That they take steps to combat stigma and discrimination and help ensure a safe practice environment, including protective equipment and materials, to enable adequate care for people with monkeypox. It is expected that the protection of nursing staff against exposure to the virus will be ensured,

given that the global health emergency of this pathogen once again exposes and risks exacerbating health inequalities as happened during the COVID pandemic -19.

FINAL CONSIDERATIONS

As seen in this study, Monkeypox is a zoonotic viral infection that results in outbreaks similar to those of smallpox and chickenpox, making it difficult to differentiate based on symptoms alone. Therefore, it requires greater attention and knowledge from nursing professionals, even considering the spread from person to person and mortality significantly lower than in human smallpox.

And, as nurses play a critical role in educating their patients and the community, it is of paramount importance that nursing staff are encouraged to stay up-to-date on information related to the virus. That understands about treatments, care, PPE, disease progression, transmission and symptoms, in order to help patients and community members understand how to protect themselves and each other, especially from misinformation about health. This way, professionals will be ensuring that the community has the necessary knowledge and resources to stay healthy.

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