



REVISIONES

Nursing teams facing patients' clinical deterioration in wards: an integrative review

A equipa de enfermagem diante da deterioração clínica do paciente na enfermaria: uma revisão integrativa

El equipo de enfermería frente al deterioro clínico del paciente en la sala de ingreso: una revisión integrativa

Tainá Lima Miranda¹
Cristiane Rodrigues da Rocha¹
Luana Ferreira de Almeida²
Sarah Lopes Silva Sodré¹
Renê dos Santos Spezani³
Ana Cristina Silva Pinto¹

¹ Federal University of the State of Rio de Janeiro, Brazil.. taina.miranda@unirio.br

² Rio de Janeiro State University, Brazil.

³ Augusto Motta University Center, Brazil..

<https://doi.org/10.6018/eglobal.567651>

Received: 22/04/2023

Accepted: 28/09/2023

ABSTRACT:

Objective: To explore, in scientific publications, the Nursing assistance provided to critically-ill or potentially serious adult patients hospitalized in wards.

Method: An integrative review carried out in November 2022 in the Web of Science, PubMed, *Biblioteca Virtual em Saúde*, Scopus and EMBASE databases, using the following string: “nursing AND critical care AND patients’ rooms OR ward OR infirmary AND adult OR middle aged OR aged OR aged, 80 and over”.

Results: Of the 4,596 studies found, 19 original articles published between 2017 and 2022 were included. Their contents were grouped into two categories: “Barriers for the care to be provided to acute patients in wards” and “Opportunities to improve care quality”.

Conclusion: From this review it was possible to extract possible barriers and potentialities for advancing care for critically-ill patients in wards, which can serve as a starting point for health teams to rethink the practice and create strategies aimed at solving barriers and at implementing care improvements.

Key words: Nursing; Critical Care; Patients' Rooms; Adult; Clinical Deterioration; Patient Safety.

RESUMO:

Objetivo: Explorar, nas publicações científicas, a assistência de enfermagem prestada ao paciente adulto crítico ou potencialmente grave internado nas enfermarias.

Método: Revisão integrativa, realizada em novembro de 2022, nas bases Web of Science, PubMed, Biblioteca Virtual em Saúde, Scopus e EMBASE, utilizando-se a *string*: “nursing AND critical care AND patients’ rooms OR ward OR infirmary AND adult OR middle aged OR aged OR aged, 80 and over”.

Resultados: Dos 4.596 estudos encontrados, foram incluídos 19 artigos originais, publicados entre 2017 e 2022. Os seus conteúdos foram agrupados em duas categorias: “barreiras para os cuidados ao paciente agudo nas enfermarias” e “oportunidades para a melhoria da qualidade da assistência”.

Conclusão: A partir desta revisão, foi possível extrair possíveis barreiras e potencialidades para o avanço do cuidado ao paciente crítico em enfermarias, o que pode servir de ponto de partida para as equipas de saúde repensarem a prática e criarem estratégias que visem a resolução de barreiras e à implementação de melhorias na assistência.

Palavras-chave: Enfermagem; Cuidados Críticos; Quartos de Pacientes; Adulto; Deterioração Clínica; Segurança do Paciente.

RESUMEN:

Objetivo: Buscar, en las publicaciones científicas, la atención de enfermería que se brinda a los pacientes adultos críticos o potencialmente graves internados en las salas.

Método: Revisión integradora, realizada en noviembre de 2022, en las bases de datos Web of Science, PubMed, Biblioteca Virtual en Salud, Scopus y EMBASE, utilizando la *string*: “nursing AND critical care AND patients’ rooms OR ward OR infirmary AND adult OR middle aged OR aged OR aged, 80 and over”.

Resultados: De los 4.596 estudios encontrados, se incluyeron 19 artículos originales, publicados entre 2017 y 2022. Los contenidos se agruparon en dos categorías: “barreras para la atención de pacientes agudos en las salas de ingreso” y “oportunidades para mejorar la calidad de la atención”.

Conclusión: A partir de esta revisión, fue posible extraer posibles barreras y posibilidades para mejorar la atención al paciente crítico en las salas de ingreso, que pueden servir como punto de partida para que los equipos de salud replanteen la práctica y creen estrategias para eliminar las barreras e implementar mejoras en la asistencia.

Palabras clave: Enfermería; Cuidados Críticos; Habitaciones de Pacientes; Adulto; Deterioro Clínico; Seguridad del Paciente

INTRODUCTION

In health care, there is a growing demand for Intensive Care Unit (ICU) beds for adults, largely associated with changes in the epidemiological profile caused by population aging⁽¹⁾. This reality was even more evident with the advent of the COVID-19 pandemic in 2020, generating an even greater burden on hospital resources⁽²⁾.

In this care context, the patients' clinical conditions are oftentimes aggravated in non-critical units such as wards, which means that they need to receive care from the team in these sectors until they can be admitted to an ICU. An Italian study, which evaluated the instability risk even on admission over almost two years, found that it is common for vulnerable patients to be hospitalized in wards, with more than 15% of them presenting average risk and 17% high risk of clinical instability⁽³⁾.

Therefore, at the global level, timely identification and response to the clinical deterioration of adult patients admitted to wards is part of the routine interprofessional practice in institutions⁽⁴⁾. However, although it is routine, it is also an international concern, as there are still factors that have not been fully elucidated about possible failures in identifying the first deterioration signs, capable of generating delays in care escalation and compromising patient⁽⁵⁾.

In addition, it is a fact that intensive care beds are limited in number. A British survey revealed that delays in admitting critically-ill patients to the ICU are common due to the

tension of available vacancies, resulting in longer period of time until the condition stabilizes. The consequence was observed in the percentage of 50% of mortality among patients whose conditions deteriorate in wards, even before being transferred to an ICU. This fact gains even more impact when considering that patients in end-of-life care were excluded from the aforementioned study, which therefore dealt with the absence of intensive care in viable patients⁽⁶⁾.

The Nursing team is within this scenario, whose practice involves several tasks in the wards and, concomitantly, plenty of time at the bedside, with these professionals are oftentimes being responsible for detecting clinical deterioration and for activating care escalation, with a crucial participation in proper treatment. Thus, this team has its work affected by the presence of critically-ill patients in that sector⁽⁷⁾.

Given the above, the objective of the current study was to explore, in scientific publications, the Nursing assistance provided to critically-ill or potentially serious adult patients hospitalized in wards.

METHOD

This is an integrative literature review. To carry out the study, the six stages recommended for the method were followed: 1) elaboration of the guiding question; 2) extensive search in the literature, with subsequent use of inclusion and exclusion criteria; 3) data collection; 4) critical evaluation of the studies selected; 5) discussion of the results; and 6) presentation of the integrative review⁽⁸⁾.

The PICo acronym was used, where “P” represents the Population; “I”, the Phenomenon of Interest; and “Co”, the Context. The following research question was then defined: What is described in the literature involving Nursing assistance (I) to adult patients in critical or potentially serious conditions (P) hospitalized in wards (Co)? The search for studies was carried out in November 2022 in the Web of Science, PubMed, *Biblioteca Virtual em Saúde* (BVS), Scopus and EMBASE databases, through *Comunidade Acadêmica Federada* (CAFe) made available by the *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* (CAPES) Journals Portal.

To carry out the initial search, the *Descritores em Ciência da Saúde*/Medical Subject Headings (DeCS/MeSH) and two uncontrolled descriptors – *ward* and *infirmery* – were used, joined by Boolean operators and assembling the following string: *nursing AND critical care AND patients' rooms OR ward OR infirmery AND adult OR middle aged OR aged OR aged, 80 and over*.

In BVS, the descriptors were used in Portuguese: *enfermagem AND cuidados críticos AND quartos de pacientes OR enfermaria AND adulto OR meia idade OR envelhecido OR idoso, 80 anos ou mais*. The search strategies are indicated in Chart 1.

Chart 1: Database search strategies used in November 2022. Rio de Janeiro, RJ, Brazil, 2023

| Database | Search strategies |
|----------------|---|
| Web of Science | ((TS=(nursing)) AND TS=(critical care)) AND TS=(patients' rooms OR ward OR infirmary)) AND TS=(adult OR middle aged OR aged OR aged, 80 and over) |
| PubMed | (((((nursing[MeSH Terms] AND (critical care[MeSH Terms])) AND (adult[MeSH Terms])) OR (middle aged[MeSH Terms])) OR (aged[MeSH Terms])) OR (aged, 80 and over[MeSH Terms])) AND (patients' rooms[MeSH Terms]) OR (ward[Other Term]) OR (infirmary[Other Term]) |
| BVS | (enfermagem) AND (cuidados críticos) AND (quartos de pacientes) OR (enfermaria) AND (adulto) OR (meia idade) OR (envelhecido) OR (idoso, 80 anos ou mais) |
| Scopus | (TITLE-ABS-KEY (nursing) AND TITLE-ABS-KEY (critical AND care) AND TITLE-ABS-KEY (patients' AND rooms) OR TITLE-ABS-KEY (ward) OR TITLE-ABS-KEY (infirmary) AND TITLE-ABS-KEY (adult) OR TITLE-ABS-KEY (middle AND aged) OR TITLE-ABS-KEY (aged) OR TITLE-ABS-KEY (aged, 80 AND over)) |
| EMBASE | ('nursing'/de OR 'nursing') AND ('critical care'/de OR 'critical care') AND ('patients rooms' OR 'ward'/de OR 'ward' OR 'infirmary'/de OR 'infirmary') AND ('adult'/de OR 'adult' OR 'middle aged'/de OR 'middle aged' OR 'aged'/de OR 'aged' OR 'aged, 80 and over'/de OR 'aged, 80 and over') |

Source: Research data, 2023.

The following inclusion criteria were used: articles published between 2017 and 2022; in Portuguese, Spanish or English; available with their full texts; that addressed Nursing assistance in wards for critically-ill patients or those with deterioration of their clinical conditions, either potential or actual. The time frame of the last five years as a search filter aimed at surveying the most recent discussions on the topic.

As for the exclusion criteria, the following were applied: studies that had the population group under the age of 18 and pregnant or puerperal women as target patients; as well as papers such as preprints, experience reports and literature reviews.

The Intelligent Systematic Review (Rayyan) app was used to organize the search and ease identification of duplicates and selection of the studies. This phase took place in pairs between two researchers, by reading the titles, abstracts and keywords. The articles selected were read in full to confirm their inclusion in the study. In cases of disagreement, the research studies were read in full and discussed with the participation of a third researcher for decision-making.

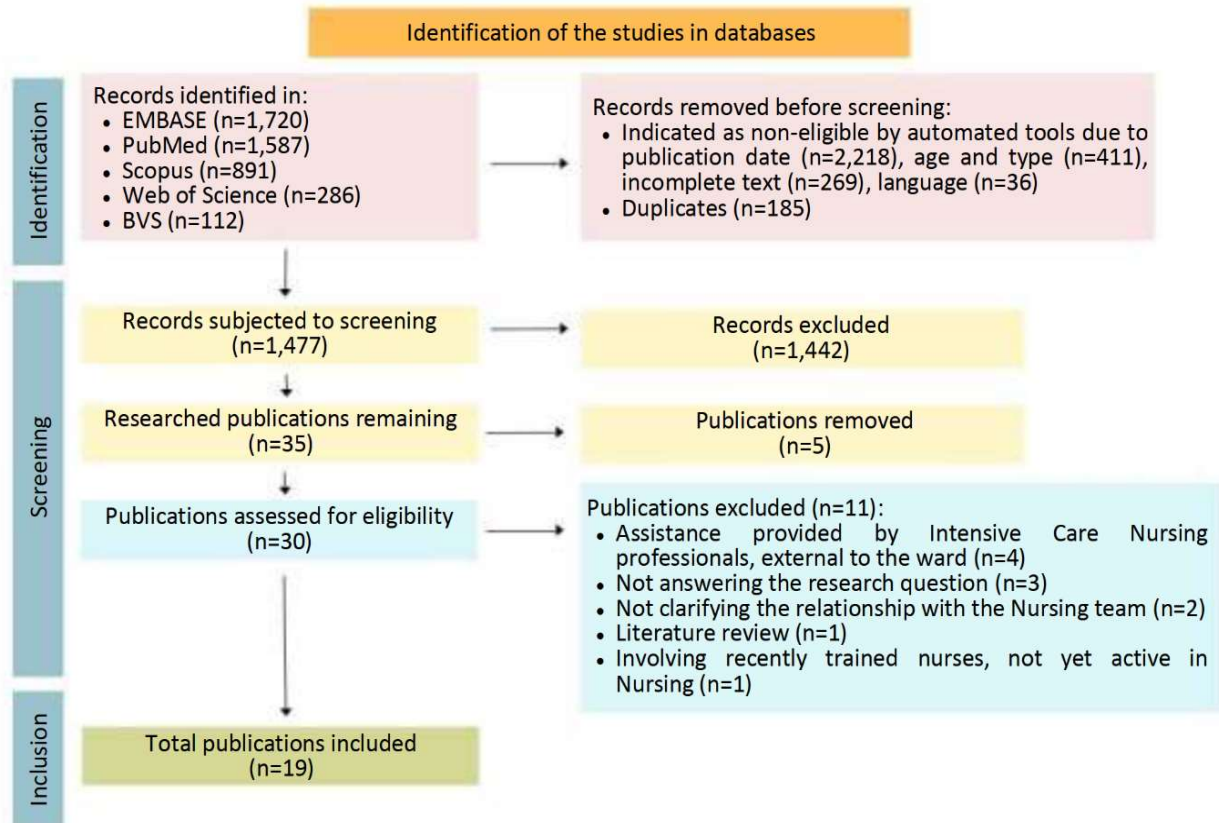
The publications included were organized in an instrument adapted from the study by Souza *et al.*,⁽⁸⁾ in a table in Microsoft Excel containing: title, database, year of publication, authors, language, country, scenario, type of publication, objective, description of the sample, data collection modality and period, results and recommendations.

With the data gathered in this instrument, it was possible to evaluate and find similarities between the main subject matters addressed, assembling thematic categories. The results were presented through a narrative synthesis.

RESULTS

The search and selection process was systematized in Figure 1.

Figure 1: Flowchart corresponding to selection of the articles for the review. Rio de Janeiro, RJ, Brazil, 2023



Source: Research data based on the PRISMA 2020 adaptation and translation⁽⁹⁾, 2023.

Initially, 4,596 publications were found: 1,720 in EMBASE, 1,587 in PubMed, 891 in Scopus, 286 in Web of Science and 112 in BVS.

After applying the automated database filters related to the inclusion and exclusion criteria, 1,622 publications were grouped. 185 duplicates were removed, followed by 1,477 records for analysis by reading their titles, abstracts and keywords. 30 articles were selected and read in full, of which 19 were included in the review.

As shown in Chart 2, all years between 2017 and 2022 were present as publication dates, with prevalence of 2018, 2019 and 2021, with 4 (21%) each, followed by 2017 with 3 (16%) and by 2020 and 2022, with 2 (10%) each. There was predominance of materials written in English, totaling 18 (95%) studies, and only 1 (5%) in Portuguese.

Chart 2: Studies included in the review. Rio de Janeiro, RJ, Brazil, 2023

| | Title of the article | Authors / Year / Language / Database / Country | Study objective |
|-----------|--|--|--|
| P1 | The professional and personal debriefing needs of ward based nurses after involvement in a cardiac arrest: an explorative qualitative pilot study. | Clark R, Mclean C ⁽¹⁰⁾ 2018 / English / EMBASE/ United Kingdom. | To identify the ward nurses' needs for debriefing after performance in cardiac arrest situations and the barriers to participating. |
| P2 | Failure to detect ward hypoxaemia and hypotension: contributions of insufficient assessment frequency and patient arousal during nursing assessments. | Saab R, Wu BP, Rivas E, Chiu A, Lozovoskiy S, Ma C, <i>et al.</i> ⁽¹¹⁾ 2021 / English / PubMed / United States of America. | To test the following hypotheses: (I) oxygen desaturation and hypotension episodes are frequently missed because they take place between intermittent vital signs checks; and (II) the conventional process for checking these signs awakens the patients to the point of creating transient false-normal values. To assess whether hypoxemia and hypotension coincided. |
| P3 | Seeing the whole picture in enrolled and registered nurses' experiences in recognizing clinical deterioration in general ward patients: a qualitative study. | Chua WL, Legido-Quigley H, Ng PY, McKenna L, Hassan NB, Liaw SY ⁽¹²⁾ 2019 / English / PubMed / Singapore. | To explore nurses' experience in recognizing patients with clinical deterioration in general wards. |
| P4 | Insight into hospital ward nurses' concerns about patient health and the corresponding Medical Emergency Team nurse response. | Kalliokoski J, Kyngäs H, Ala-Kokko T, Meriläinen M ⁽¹³⁾ 2019 / English / Scopus / Australia. | To understand nurses' concerns when making calls to the Medical Emergency Team (MET*) that did not meet the vital signs criteria, as well as the responses by the MET* nurses to these calls. |
| P5 | <i>Avaliação do desempenho do escore de alerta precoce modificado em hospital público brasileiro.</i> | Montenegro SMSL, Miranda CH ⁽¹⁴⁾ 2019 / Portuguese / BVS / Brazil. | To evaluate the performance of the Modified Early Warning Score (MEWS†) combined with a Rapid Response Team (RRT‡) in reducing serious adverse events in deteriorating patients admitted to wards. |

| | | | |
|------------|--|--|--|
| P6 | Practice priorities for acute care nursing: a Delphi study. | Connell CJ, Plummer V, Crawford K, Endacott R, Foley P, Griffiths DL, et al. ⁽¹⁵⁾ 2020 / English / Scopus / Australia. | To describe the risk and frequency of challenges in acute Nursing care and priorities for the practice in wards, based on experts' consensus. |
| P7 | Strengthening nursing surveillance in general wards: a practice development approach. | Peet J, Theobald K, Douglas C ⁽¹⁶⁾ 2019 / English / Scopus / Australia. | To explore the Nursing surveillance context and culture in a ward. |
| P8 | Barriers to implementing the Sepsis Six guidelines in an acute hospital setting. | Breen SJ, Rees S ⁽¹⁷⁾ 2018 / English / Scopus / United Kingdom. | To identify the barriers perceived by physicians and nurses for implementing the Sepsis Six pathway in a hospital. |
| P9 | Ward nurses' experiences of the discharge process between intensive care unit and general ward. | Kauppi W, Proos M, Olausson S ⁽¹⁸⁾ 2018 / English / Scopus / Sweden. | To explore the experiences of general ward nurses when caring for recently admitted ICU patients. |
| P10 | Barriers and facilitating factors related to use of early warning score among acute care nurses: a qualitative study. | Petersen JA, Rasmussen LS, Rydahl-Hansen S ⁽¹⁹⁾ 2017 / English / Scopus / Denmark. | To identify barriers and facilitating factors related to aspects of the Early Warning Score (EWS§) protocol: adherence to monitoring frequency; referral to physicians with high EWS§; and activation of the Medical Emergency Team. |
| P11 | Application of the National Early Warning Score (NEWS) as a stratification tool on admission in an Italian acute medical ward: a perspective study. | Spagnolli W, Rigoni M, Torri E, Cozzio S, Vettorato E, Nollo G ⁽³⁾ 2017 / English / Scopus / Italy. | To evaluate the National Early Warning Score (NEWS) as a tool to stratify the patients' risk when admitted to the Internal Medicine ward and ensure hospitalization in the most appropriate bed. To consider the performance of NEWS in patients with sudden cardiac events and chronic respiratory failure. |
| P12 | Building safety cultures at the frontline: an emancipatory Practice Development approach for strengthening nursing surveillance on an acute care ward. | Peet J, Theobald KA, Douglas C ⁽²⁰⁾ 2022 / English / Scopus / Australia. | To evaluate an Emancipatory Practice Development approach to strengthen Nursing surveillance in a Medical-Surgical ward. |

| | | | |
|------------|--|--|---|
| P13 | Effect of national early warning scoring system implementation on cardiopulmonary arrest, unplanned ICU admission, emergency surgery, and acute kidney injury in an emergency hospital, Egypt. | Badr MN, Khalil NS, Mukhtar AM ⁽²¹⁾ 2021 / English / EMBASE / Egypt. | To evaluate the effect of implementing NEWS on identifying patients at risk of clinical deterioration in a ward. |
| P14 | Clinical practices in the escalation of care for the deteriorating patient: a multicentre study. | Ludikhuizen J, Dijkgraaf MG, Dongelmans DA, So R, Korsten E, Schoonderbeek J, et al. ⁽²²⁾ 2021 / English / EMBASE / Netherlands. | To obtain diverse information on potentialities to improve deterioration detection and activation of the Rapid Response System (RRS). |
| P15 | A call for better doctor-nurse collaboration: a qualitative study of the experiences of junior doctors and nurses in escalating care for deteriorating ward patients. | Chua WL, Legido-Quigley H, Jones D, Hassan NB, Tee A, Liaw SY ⁽²³⁾ 2020 / English / EMBASE / Singapore. | To explore the experiences of junior physicians and nurses in escalating care for worsening patients to a MET* service and understanding the barriers that interfere with care escalation. |
| P16 | Frequency of vital sign measurement among intubated patients in the general ward and nurses' attitudes toward vital sign measurement. | Kamio T, Kajiwara A, Iizuka Y, Shiotsuka J, Sanui M ⁽²⁴⁾ 2018 / English / EMBASE / Japan. | To investigate differences in the frequency of checking vital signs between patients with and without emergency tracheal intubation in general wards and to explore nurses' attitudes regarding measurement of vital signs. |
| P17 | How did nurses cope with the fast, comprehensive organisational changes at Danish hospital wards during the COVID-19 pandemic? An interview study based on nurses' experiences. | Thude BR, Primdahl J, Jensen HI, Elkjær M, Hoffmann E, Boye LK, et al. ⁽²⁵⁾ 2021 / English / Scopus / Denmark. | To understand how Danish nurses dealt with the organizational changes caused by COVID-19 in their workplace, seeking to identify barriers and facilitating factors to ensure the best possible conditions for this team. |
| P18 | Early detection and treatment of acute illness in medical patients with novel software: a prospective quality improvement initiative. | Burns J, Williams D, Mlinaritsch D, Koechlin M, Trena Canning, Neitzel A ⁽²⁶⁾ 2022 / English / Web of Science / Canada. | To develop a technological tool for the early identification of deterioration and care initiation; thereby improving patient care and outcomes and saving health care resources. |

| | | | |
|------------|---|---|--|
| P19 | An analysis of messages sent between nurses and physicians in deteriorating internal medicine patients to help identify issues in failures to rescue. | Wong HJ, Bierbrier R, Ma P, Quan S, Sannie L, Wu RC ⁽²⁷⁾ 2017 / English / Scopus / Canada. | To evaluate, in cases of deterioration and transfer to ICU, how many had a critical message and their quality. The death outcome was related to the message quality and response or to the timeliness of activating the Rapid Response Team (RRT \ddagger). |
|------------|---|---|--|

Source: Research data, 2023.

MET* – Medical Emergency Team; MEWS \dagger – Modified Early Warning Score; RRT \ddagger – Rapid Response Team; EWS \S – Early Warning Score; NEWS \parallel – National Early Warning Score; RRS \ulcorner – Rapid Response System

As countries of origin, 4 (21%) studies were from Australia, 2 (10%) from the United Kingdom, 2 (10%) from Singapore, 2 (10%) from Denmark, 2 (10%) from Canada, and 1 (5%) from Brazil, the United States of America, Sweden, Italy, Egypt, the Netherlands and Japan each.

Of the 19 research studies, 15 (79%) had a hospital as a locus (P1, P2, P3, P4, P5, P7, P8, P10, P11, P12, P13, P15, P16, P18, P19)^(3,10-14,16-17,19-21,23-24,26-27), whereas 4 (21%) consisted of multicenter studies (P6, P9, P14, P17)^(15,18,22,25). Nine (47%) publications were qualitative, 9 (47%) were quantitative and 1 (5%) was qualitative-quantitative.

As for the sample, most of the studies resorted to the participation of health professionals, 9 (47%) with the Nursing team exclusively (P1, P3, P6, P7, P9, P10, P12, P16, P17)^(10,12,15-16,18-20,24-25) and 3 (16%) with nurses and physicians (P8, P14, P15)^(17,22-23). Either exclusively or in addition to another sampling method, 9 (47%) research studies used data from patients admitted to the target wards and/or records of emergency or medical team calls (P2, P4, P5, P11, P13, P14, P16, P18, P19)^(3,11,13-14,21-22,24,26-27).

In relation to the data collection tools, 8 (42%) publications used interviews (P1, P3, P7, P9, P10, P12, P15, P17)^(10,12,16,18-20,23,25), and 3 (16%) of them associated the observation with the interviews (P7, P12, P15)^(16,20,23). In addition, 4 (21%) resorted to questionnaires (P6, P8, P14, P16)^(15,17,22,24), and either added collection modality or not; finally, 9 (47%) studies carried out searches in medical charts and hospital records (P2, P4, P5, P11, P13, P14, P16, P18, P19)^(3,11,13-14,21-22,24,26-27).

With the exception of 2 (10%) research studies (P17 and P18)^(25,26), whose data were collected from 2020 onwards, in all others, this stage was conducted before that year. This time frame stands out, considering the possible influence that the COVID-19 pandemic might have exerted on the results.

The two thematic categories built from the analysis of the content of the publications are detailed in Charts 3 and 4, respectively called as follows: “Barriers to acute patient care in wards” and “Opportunities to improve care quality”.

Chart 3: Barriers to acute patient care in wards. Rio de Janeiro, RJ, Brazil, 2023

Category 1: Barriers to acute patient care in wards

- Difficulty recognizing clinical deterioration signs and making decisions, associated with the workload assigned to Nursing in a busy sector;^(12,17,22,26)
- Number of professionals incompatible with the demands;^(12,15,17-18)
- High proportion of patients per nurse, especially in night shifts;⁽²²⁾
- Lower Rapid Response Team (RRT*) activation rates during the evening and weekends;⁽²²⁾
- Altered vital signs missed, with hypotension and hypoxemia episodes missed during 4-hour check intervals⁽¹¹⁾ and emergency intubation in the ward associated with the lower frequency of vital signs recorded, including respiratory rate, seen as the most problematic due to the verification delay;⁽²⁴⁾
- Failure to check all vital signs during the rounds;^(21,24)
- Delegation of the task of checking vital signs, without necessary direction and support, to Nursing team members who may not recognize the first clinical deterioration signs due to the difficulty relating the changes to the patients' conditions;⁽¹²⁾
- Less frequent monitoring than recommended by the Early Warning Scores (EWS†), in times of agitation in the sector or during the night so as not to wake up the patient;⁽¹⁹⁾
- Conflict with physicians;⁽²⁰⁾
- Reluctance to activate the Medical Emergency Team (MET‡) due to previous negative experiences with it⁽¹⁹⁾ or due to criticisms received by the assisting medical team, when not consulted;⁽²³⁾
- Non-use of pre-established criteria for activating the medical team or the MET‡. Attitude attributed to the large number of patients with high scores,⁽¹⁹⁾ or postponed only when they are unable to contact the assisting medical team or when they lack adequate resources in the sector;⁽²³⁾
- Difficulty activating the assisting medical team⁽¹²⁻¹³⁾ or delays in responding appropriately;^(15,21,27)
- Difficulty obtaining medical reviews when there is concern from the nurses, but when there are still no measurable signs of worsening clinical status;^(16,23)
- Weak communication between nurses and physicians, with lack of good quality information to assess severity of the case,^(23,27) with little use of objective measures when there is concern about the patients' health status, such as the Early Warning Scale, Glasgow Coma Scale (GCS§) and Visual Analog Scale (VAS||);⁽¹³⁾
- Non-appreciation of nurses' expertise in clinical decisions, due to overconfidence in the biomedical model;^(16,20)
- Difficulties perceived by the patients' high complexity;^(15,18)
- Lack of adequate patient preparation before transfer from the ICU to the ward;⁽¹⁸⁾
- Demands to admit patients, suboptimal communication, early or inappropriate discharge, long waits or cancellations of surgeries or procedures;⁽¹⁵⁾
- Perception of inadequate technical skills;^(15,17)
- Lack of knowledge about improvement activities and the standardization offered by the institution;⁽¹⁰⁾
- Difficulty participating in care improvement activities due to work overload;^(10,20)
- Absence of discussions for learning after cases of patient deterioration;⁽²⁰⁾
- Shift handoffs with prioritization of tasks, interruptions and in noisy places;⁽¹⁶⁾
- Culture based on standardized routines, prioritizing growing bureaucratic and administrative concerns, to the detriment of patient care;^(16,20)
- Difficulty accessing equipment such as the gasometry device⁽¹⁷⁾ and monitors;⁽¹⁸⁻¹⁹⁾

- Inadequate bed space;⁽¹⁵⁾
- Usual format of individual rooms, hindering clinical surveillance;⁽¹⁸⁾
- Loss of the predictive value from early warning scales, given clinical conditions such as acute cardiac syndromes – lower scores associated with higher risk of transfer to the ICU – or chronic hypoxemic conditions – higher scores were not precisely associated with complications;⁽³⁾
- Little opportunity perceived by assisting professionals to influence the working conditions;⁽¹⁸⁾
- Disengagement of Nursing leaders from sector transformation activities;⁽²⁰⁾
- Absence and distancing of sector managers, lack of belonging due to non-inclusion of the entire team in the institution's communications;⁽²⁵⁾
- Absence of a conducive environment for clarifying doubts.^(23,25)

Source: Research data, 2023.

RRT* – *Rapid Response Team*; EWS† – *Early Warning Score*; MET‡ – *Medical Emergency Team*; GCS§ – *Glasgow Coma Scale*; VAS|| – *Visual Analog Scale*

Chart 4: Opportunities to improve care quality. Rio de Janeiro, RJ, Brazil, 2023

Category 2: Opportunities to improve care quality

- Conducting training and educational activities to: improve the delegation of vital signs verification tasks;⁽¹²⁾ recognition and treatment of sepsis, reflecting on multiprofessional cooperation and technical skills for venipunctures, collection of blood cultures and administration of antibiotics in 1 hour in the case of sepsis;⁽¹⁷⁾ calls to the Medical Emergency Team (MET*) and application of the Glasgow Coma Scale (GCS†) in neurological patients;⁽²⁰⁾ the importance of early identification of clinical condition deterioration and respiratory rate verification;⁽²⁴⁾ care for COVID-19 patients, before starting to work in the sector;⁽²⁵⁾ improving communication between nurses and physicians;^(23,27)
- Unrestricted access and training for the use of equipment such as the gasometry device;⁽¹⁷⁾
- Multiprofessional discussion moments after patient deterioration cases, as an opportunity for learning and improving the professional performance, addressing doubts and concerns;^(10,20)
- Division of care tasks between team members, keeping the same group of patients, aiming at the early recognition of alterations;⁽¹²⁾
- Encouraging an interprofessional support culture, with the intention of encouraging consultation with more experienced professionals when in doubt;^(12,18,23,25)
- Availability of at least one more experienced nurse per work shift;^(12,25)
- Management of difficulties and creation of strategies for improvements based on collaborative models through the participation of the care team;^(15-16,20)
- More frequent monitoring than per the protocol if there is concern about a patient due to factors not present in the early warning scores;⁽¹⁹⁾
- Checking vital signs at intervals shorter than every 4 hours and, if possible, continuously to avoid missing alterations;⁽¹¹⁾
- Encouraging clinical discussion at the bedside during shift handoffs, focusing on the patient to the detriment of sector tasks, avoiding interruptions;⁽²⁰⁾
- Support and collaboration received by more experienced nurses when necessary, such as from the MET*,⁽¹³⁾ from the sector itself and/or the ICU;⁽¹⁸⁾
- Well-planned discharge from the ICU to the ward, with collaboration between the teams;⁽¹⁸⁾

- Desire for greater collaboration with the MET* to prevent patient deterioration;⁽¹⁹⁾
- Appreciation of clinical judgment and changes in the patient's condition that go beyond pre-established scales, with activation of the assisting medical team or MET* when there are changes in vital signs that have not yet reached the severity score, but with changes in the patient's health status (such as complaints related to tiredness, pain, malaise, sweating, changes in neurological status, breathing pattern, skin color) and when there is no success in contacting the sector's medical team;^(3,12-13,19)
- Extended or intermediate care services;⁽¹⁸⁾
- Valuing Rapid Response Teams (RRT§);^(19,22)
- Use of warning scores, systematized and easy-to-apply tools, to trigger medical or RRT§ reviews and to prevent serious events, such as the Modified Early Warning Score (MEWS||), with scores based on the institutional profile,⁽¹⁴⁾ EWS‡,⁽¹⁹⁾ National Early Warning Score (NEWS¶)^(13,21) or to decide on the most suitable bed for the patient's hospitalization, based on their evaluation on admission by means of NEWS¶;⁽³⁾
- Availability of pre-established courses of action, based on the verified risk stratum, to direct and streamline care through mechanisms such as a flowchart associated with MEWS||⁽¹⁴⁾ or a software program;⁽²⁶⁾
- Validation and use of software to reduce Nursing workload, early identification of clinical deterioration and adoption of interventions, reducing the number of complications;⁽²⁶⁻²⁷⁾
- Adequate support by the assisting medical team;⁽¹⁸⁾
- Promoting collaboration between physicians and nurses, to minimize the hegemonic culture of medical dominance over the patient;⁽²³⁾
- Reinforcement of the Nursing care team when there are more vulnerable patients in the sector⁽¹⁸⁾ and at busy times;⁽¹⁹⁾
- Using continuous monitoring devices or limiting use of early warning scores in high-risk patients – to meet the recommended monitoring frequency;⁽¹⁹⁾
- Availability of sector managers to help and of the necessary resources for the assistance to be provided, generating feelings of safety, confidence, comfort and care.⁽²⁵⁾

Source: Research data, 2023.

MET* – Medical Emergency Team; GCS† – Glasgow Coma Scale; EWS‡ – Early Warning Score; RRT§ – Rapid Response Team; MEWS|| – Modified Early Warning Score; NEWS¶ – National Early Warning Score.

DISCUSSION

In the studies included, the difficulties related to the Nursing team care for acute patients in wards (Chart 3) fluctuated between factors such as work overload^(12,17,22,26); few professionals in relation to the demand and number of patients^(12,17,18,22); failures in checking vital signs and correlation with clinical deterioration^(11,12,19,21,24); conflicts and failures in communication with physicians and difficulty or absence of medical reviews^(12,13,15,16,19-21,23,27); high patient complexity and perception of insufficient team skills;^(15,17,18) difficulty participating or lack of well-established activities to improve care^(10,20); prioritization of tasks and administrative demands^(16,20); structural and equipment limitations^(15,18,19); limitations of predefined scales for identifying deterioration⁽³⁾; little opportunity to modify the practice and distancing from superiors^(18,20,25); discouraging environment to solve doubts^(23,25).

Such barriers relate to negative feelings experienced by the teams, such as anxiety⁽¹⁰⁾; need for support and safety^(10,18); frustration^(16,18,23); isolation or loneliness^(16,18,25); inability^(16,18); disempowerment due to not having their evaluation considered in clinical decisions⁽¹⁶⁾; exposure, vulnerability, sadness, guilt, uncertainty, dissatisfaction, fear, moral conflict, overload, failure and shame when unable to deal with a situation considered simple and having to ask for help⁽¹⁸⁾; apprehension, devaluation and stress⁽²⁵⁾.

Despite the new findings, several difficulties found are corroborated by other literature reviews and are capable of influencing recognition and response to clinical deterioration in a non-critical sector^(4,5,28). The issue is extremely important, as obstacles to care can lead to suboptimal care, with failures to identify clinical deterioration and compromising patient safety.

On the other hand, several opportunities also emerged to improve care quality (Chart 4) many of which that, *a priori* and with planning, may represent little or no additional expenses to the institution, such: as educational activities and training^(12,17,18,20,23,27); unrestricted access to existing technologies, such as the gasometry device⁽¹⁷⁾; implementation of multiprofessional reviews after adverse events^(10,20); continuous division of care tasks⁽¹²⁾; encouraging a support culture and a conducive environment to addressing doubts^(12,18,23,25); rosters with at least one experienced nurse per shift^(12,25); support and collaboration between professionals, whether from the sector or from the ICU⁽¹⁸⁾; management of difficulties and planning of improvements with participation of the care team^(15,16,20); periodicity of vital signs checks adjusted to severity of the patient^(11,19); patient-focused shift handoffs;⁽²⁰⁾ well-planned transfers from the ICU to the ward, with cooperation between teams⁽¹⁸⁾; adequate collaboration and support by the medical team^(18,23); approachable superiors⁽²⁵⁾.

In addition to these, other studies contemplated strategies that involve greater planning and availability of resources by the institution, such as rapid response teams^(13,14,19-20,22,23,27); extended or intermediate care services⁽¹⁸⁾; team reinforcement when there are potentially seriously-ill patients and at busier times in the sector⁽¹⁹⁾; and provision of equipment such as monitors for continuous monitoring^(11,19).

The variations of early warning scales were cited in five publications, such as the Early Warning Score (EWS)⁽¹⁹⁾, the Modified Early Warning Score (MEWS)⁽¹⁴⁾ and the National Early Warning Score (NEWS)^(3,13,21).

As advantages of using such scales, the study by Badr *et al.*⁽²¹⁾ found the following by using NEWS: increased frequency of vital signs checks and improvement in their quality (measurement of all scale parameters), more medical reviews, reduction of deteriorations such as acute kidney injury, emergency surgeries, unplanned hospitalizations in ICU and cardiopulmonary arrest (CPA).

Similarly, in the Brazilian survey by Montenegro and Miranda⁽¹⁴⁾, it was evidenced that MEWS, with a cutoff point greater than or equal to 4 (adjusted to the local reality), was able to measure serious adverse events such as transfer to the ICU, cardiac arrest and unexpected death.

In their review, Al-Moteri *et al.*⁽⁵⁾ assert that, even when all signs are recorded, there may be failure in recognizing deterioration by the Nursing team. However, it is not

clear whether these failures are linked to factors such as poor interpretation of the deterioration signs, to inattention to other simultaneous demands in the sector, or to a conscious attitude of not escalating care based on clinical judgment.

As indicated in the research studies by Montenegro and Miranda⁽¹⁴⁾, Burns *et al.*⁽²⁶⁾ and Wong *et al.*⁽²⁷⁾, these findings corroborate how promising initiatives that outline courses of action according to stratification of the patient's severity can be, as well as those that ease decision-making and timely care for clinical deterioration, such as software programs or flowcharts.

It is important to emphasize that alert systems are potentially beneficial and simple and easy-to-implement tools that should be used to complement care, but not replace the professionals' experience and common sense in clinical judgment^(3,19). As possible risks, such early warning systems may have their predictive value reduced in the face of some clinical conditions such as cardiac and hypoxemic pathologies⁽³⁾, and can even act as barriers to activation of physicians or Medical Emergency Teams (METs), when nurses are concerned about the patients but the vital signs have not shown alterations^(12,13,23).

When compared to other similar reviews^(4,5,28), this literature review had as a differential the equal focus given to the survey of strategies for improving the assistance provided, found in the studies included, as well as the difficulties of caring for a deteriorating patient in a ward.

In addition to that, most of the studies (17) are from developed countries, which shows a closer look at situations of patient deterioration in non-critical sectors, in contrast to developing nations such as Brazil.

As limitations, the current study may not have retrieved all the publications available on the topic due to the facts that the search was restricted to the last five years, did not use all health databases, was limited to scientific articles in Portuguese, English and Spanish and failed to include research studies related to specialized Nursing assistance outside wards.

However, the review rescued several nuances of the care provided to critically-ill patients admitted to wards in different countries, as well as strategies aimed at care quality and safety. Thus, the study contributes to knowledge about what is most up-to-date and can encourage reflections on the theme, with the resulting adoption of measures to improve the professional practice in hospital institutions.

CONCLUSION

Despite the focus heterogeneity of the most recent studies, in the current review it was possible to group and extract two categories concerning the barriers and potentialities to improve health care by the ward teams in the face of patients in clinical deterioration. This compilation of scientific studies may serve as a starting point material for the local survey of data on the organization needs of services by managers and health authorities and as an inspiration for further research studies involving the theme.

Although the barriers and potentialities found are similar to those experienced in many wards and provide support for rethinking new practices, the specificities should be considered in order to achieve actual improvements in the quality of the care provided to vulnerable patients and ensure their safety in terms of health. For this, it is necessary to know the local reality, the obstacles pointed out by the professionals who deal directly with the patient and the limitations of each institution. From this diagnosis, with the joint efforts by managers and the assisting team to assess the material and human resources available, it is possible to choose and implement the strategies that have the greatest success chances to contribute to the care to be provided to these patients.

REFERENCES

1. Bonfada D, Barbosa ICR, Lima KC, Garcia-Altés A. Gasto de internação de idosos em unidades de terapia intensiva nos hospitais privados de uma capital do nordeste brasileiro. *Rev Bras Geriatr Gerontol (Online)* [Internet]. 2020 [cited 2022 Nov 10];23(2):e200020. DOI: <https://doi.org/10.1590/1981-22562020023.200020>
2. Al-Dorzi HM, Aldawood AS, Almatrood A, Burrows V, Naidu B, Alchin JD, Alhumedi H, Tashkandi N, Al-Jahdali H, Hussain A, Al Harbi MK, Al Zaibag M, Bin Salih S, Al Shamrani MM, Alsaawi A, Arabi YM. Managing critical care during COVID-19 pandemic: the experience of an ICU of a tertiary care hospital. *J Infect Public Health* [Internet]. 2021 [cited 2022 Nov 11];14(11):1635-1641. DOI: <https://doi.org/10.1016/j.jiph.2021.09.018>
3. Spagnolli W, Rigoni M, Torri E, Cozzio S, Vettorato E, Nollo G. Application of the National Early Warning Score (NEWS) as a stratification tool on admission in an Italian acute medical ward: a perspective study. *Int J Clin Pract* [Internet]. 2017 [cited 2022 Nov 29];71(3-4):e12934. DOI: <https://doi.org/10.1111/ijcp.12934>
4. Allen E, Elliott D, Jackson D. Recognising and responding to in-hospital clinical deterioration: an integrative review of interprofessional practice issues. *Journal of clinical nursing. J Clin Nurs* [Internet]. 2017 [cited 2023 Feb 02];26(23-24):3990-4012. DOI: <https://doi.org/10.1111/jocn.13839>
5. Al-Moteri M, Plummer V, Cooper S, Symmons M. Clinical deterioration of ward patients in the presence of antecedents: a systematic review and narrative synthesis. *Aust Crit Care* [Internet]. 2019 [cited 2023 Feb 02];32(5):411-20. DOI: <https://doi.org/10.1016/j.aucc.2018.06.004>
6. Harris S, Singer M, Sanderson C, Grieve R, Harrison D, Rowan K. Impact on mortality of prompt admission to critical care for deteriorating ward patients: an instrumental variable analysis using critical care bed strain. *Intensive care medicine. Intensive Care Med.* [Internet]. 2018 [cited 2023 Feb 02];44(5):606-15. DOI: <https://doi.org/10.1007/s00134-018-5148-2>
7. Almeida RO, Ferreira MA, Silva RC. O cuidado intensivo em unidades não-críticas: representações e práticas de enfermeiros recém-formados. *Texto & contexto enferm. (Online)* [Internet]. 2020 [cited 2022 Nov 01];29: e20190089. DOI: <https://doi.org/10.1590/1980-265X-TCE-2019-0089>
8. Souza MT, Silva MD, Carvalho R. Revisão integrativa: o que é e como fazer. *Einstein (São Paulo)* [Internet]. 2010 [cited 2022 Dec 04];8(1):102-6. DOI: <https://doi.org/10.1590/s1679-45082010rw1134>
9. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* [Internet]. 2021 [cited 2022 Nov 11];372(71). DOI: <https://doi.org/10.1136/bmj.n71>

10. Clark R, Mclean C. The professional and personal debriefing needs of ward based nurses after involvement in a cardiac arrest: an explorative qualitative pilot study. *Intensive Crit Care Nurs* [Internet]. 2018 [cited 2022 Nov 20];47:78-84. DOI: <https://doi.org/10.1016/j.iccn.2018.03.009>
11. Saab R, Wu BP, Rivas E, Chiu A, Lozovoskiy S, Ma C, et al. Failure to detect ward hypoxaemia and hypotension: contributions of insufficient assessment frequency and patient arousal during nursing assessments. *Br J Anaesth* [Internet]. 2021 [cited 2022 Nov 20];127(5):760-8. DOI: <https://doi.org/10.1016/j.bja.2021.06.014>
12. Chua WL, Legido-Quigley H, Ng PY, McKenna L, Hassan NB, Liaw SY. Seeing the whole picture in enrolled and registered nurses' experiences in recognizing clinical deterioration in general ward patients: a qualitative study. *Int J Nurs Stud* [Internet]. 2019 [cited 2022 Dec 21];95:56-64. DOI: <https://doi.org/10.1016/j.ijnurstu.2019.04.012>
13. Kalliokoski J, Kyngäs H, Ala-Kokko T, Meriläinen M. Insight into hospital ward nurses' concerns about patient health and the corresponding Medical Emergency Team nurse response. *Intensive Crit Care Nurs* [Internet]. 2019 [cited 2022 Dec 21];53:100-8. DOI: <https://doi.org/10.1016/j.iccn.2019.04.009>
14. Montenegro SMSL, Miranda CH. Avaliação do desempenho do escore de alerta precoce modificado em hospital público brasileiro. *Rev Bras Enferm.* (Online) [Internet]. 2019 [cited 2022 Nov 22];72(6):1502-9. DOI: <http://dx.doi.org/10.1590/0034-7167-2017-0537>
15. Connell CJ, Plummer V, Crawford K, Endacott R, Foley P, Griffiths DL, et al. Practice priorities for acute care nursing: a Delphi study. *J Clin Nurs* [Internet]. 2020 [cited 2022 Nov 25];29(13-14):2615-25. DOI: <https://doi.org/10.1111/jocn.15284>
16. Peet J, Theobald K, Douglas C. Strengthening nursing surveillance in general wards: a practice development approach. *J Clin Nurs* [Internet]. 2019 [cited 2022 Nov 25];28(15-16):2924-33. DOI: <https://doi.org/10.1111/jocn.14890>
17. Breen SJ, Rees S. Barriers to implementing the Sepsis Six guidelines in an acute hospital setting. *Br J Nurs* [Internet]. 2018 [cited 2022 Nov 26];27(9). DOI: <https://doi.org/10.12968/bjon.2018.27.9.473>
18. Kauppi W, Proos M, Olausson S. Ward nurses' experiences of the discharge process between intensive care unit and general ward. *Nurs Crit Care* [Internet]. 2018 [cited 2022 Nov 27];23(3):127-33. DOI: <https://doi.org/10.1111/nicc.12336>
19. Petersen JA, Rasmussen LS, Rydahl-Hansen S. Barriers and facilitating factors related to use of early warning score among acute care nurses: a qualitative study. *BMC Emerg Med* [Internet]. 2017 [cited 2022 Nov 28];17(36):1-9. DOI: <https://doi.org/10.1186/s12873-017-0147-0>
20. Peet J, Theobald KA, Douglas C. Building safety cultures at the frontline: an emancipatory Practice Development approach for strengthening nursing surveillance on an acute care ward. *J Clin Nurs* [Internet]. 2022 [cited 2022 Dec 11];31(5-6):642-56. DOI: <https://doi.org/10.1111/jocn.15923>
21. Badr MN, Khalil NS, Mukhtar AM. Effect of national early warning scoring system implementation on cardiopulmonary arrest, unplanned ICU admission, emergency surgery, and acute kidney injury in an emergency hospital, Egypt. *J Multidiscip Healthc* [Internet]. 2021 [cited 2022 Nov 01];14:1431-42. DOI: <https://doi.org/10.2147/JMDH.S312395>
22. Ludikhuizen J, Dijkgraaf MG, Dongelmans DA, So R, Korsten E, Schoonderbeek J, et al. Clinical practices in the escalation of care for the deteriorating patient: a multicentre study. *Neth J Crit Care* [Internet]. 2021 [cited 2022 Dec 02];29(3). Available from: <https://njcc.nl/clinical-practices-in-the-escalation-of-care-for-the-deteriorating-patient-a-multicentre-study/>

23. Chua WL, Legido-Quigley H, Jones D, Hassan NB, Tee A, Liaw SY. A call for better doctor-nurse collaboration: a qualitative study of the experiences of junior doctors and nurses in escalating care for deteriorating ward patients. *Aust Crit Care* [Internet]. 2020 [cited 2022 Nov 03];33(1):54-61. DOI: <https://doi.org/10.1016/j.aucc.2019.01.006>
24. Kamio T, Kajiwara A, Iizuka Y, Shiotsuka J, Sanui M. Frequency of vital sign measurement among intubated patients in the general ward and nurses' attitudes toward vital sign measurement. *J Multidiscip Healthc* [internet]. 2018 [cited 2022 Dec 04];11:575-81. DOI: <http://dx.doi.org/10.2147/JMDH.S179033>
25. Thude BR, Primdahl J, Jensen HI, Elkjær M, Hoffmann E, Boye LK, et al. How did nurses cope with the fast, comprehensive organisational changes at Danish hospital wards during the COVID-19 pandemic? An interview study based on nurses' experiences. *BMJ Open* [Internet]. 2021 [cited 2022 Nov 20];11:e049668. DOI: <https://doi.org/10.1136/bmjopen-2021-049668>
26. Burns J, Williams D, Mlinaritsch D, Koechlin M, Trena Canning, Neitzel A. Early detection and treatment of acute illness in medical patients with novel software: a prospective quality improvement initiative. *BMJ Open Qual* [Internet]. 2022 [cited 2022 Nov 15];11:e001845. DOI: <https://doi.org/10.1136/bmjog-2022-001845>
27. Wong HJ, Bierbrier R, Ma P, Quan S, Sannie L, Wu RC. An analysis of messages sent between nurses and physicians in deteriorating internal medicine patients to help identify issues in failures to rescue. *Int J Med Inform* [Internet]. 2017 [cited 2022 Nov 21];100:9-15. DOI: <https://doi.org/10.1016/j.ijmedinf.2017.01.008>
28. Treacy M, Stayt LC. To identify the factors that influence the recognizing and responding to adult patient deterioration in acute hospitals. *J Adv Nurs* [Internet]. 2019 [cited 2023 Feb 05];75(12):3272-85. DOI: <https://doi.org/10.1111/jan.14138>

ISSN 1695-6141

© [COPYRIGHT](#) Servicio de Publicaciones - Universidad de Murcia