

Coverage of hospital nursing absenteeism in the composition of the Technical Safety Index: is 6.67% sufficient?

*Cobertura do absenteísmo da enfermagem hospitalar na composição
do Índice de Segurança Técnica: 6,67% são suficientes?*

*Cobertura del ausentismo de enfermería hospitalaria en el
Índice Técnico de Seguridad: es suficiente un 6,67%?*

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ABSTRACT

Objective: To map scientific evidence on the (in)adequacy of the Technical Safety Index provided by the Federal Nursing Council to cover absenteeism rates in Brazilian hospital nursing.

Method: Scoping review conducted according to Joanna Briggs Institute criteria. The search was carried out in February 2024, in the sources: Virtual Health Library, Scientific Electronic Library Online, Web of Science, Scopus, MEDLINE, CAPES Periodical Portal and Brazilian Digital Library of Theses and Dissertations. Cross-sectional studies conducted in the hospital environment, published between 2004 and 2024, were included. After selecting the recruited material (n=1,297), the sample (n=29) was analyzed using descriptive statistics.

Results: Of the selected studies, 86.2% indicated superiority in the percentage of absence coverage recommended by the entity. Absenteeism rates ranged from 0% to 44.7% among nurses and from 0.47% to 46% among technicians/assistants. The estimated technical safety index ranged from 8.3% to 53% for nurses and from 8.77% to 54.3% for mid-level professionals.

Final considerations: There is evidence to support that the minimum percentage of absenteeism coverage (6.7%) provided for by the regulatory entity is not sufficient, especially in the context of public hospitals.

Descriptors: Absenteeism; Nursing team; Indicators of health services; Personnel management; Nursing staff hospital.

RESUMO

Objetivo: Mapear evidências científicas sobre a (in)adequação do Índice de Segurança Técnica previsto pelo Conselho Federal de Enfermagem para cobertura das taxas de absenteísmo da enfermagem hospitalar brasileira.

Método: Revisão de escopo conduzida conforme os critérios do Joanna Briggs Institute. A busca foi realizada em fevereiro de 2024, nas fontes: Biblioteca Virtual em Saúde, Scientific Electronic Library Online, Web of Science, Scopus, MEDLINE, Portal de Periódicos CAPES e Biblioteca Digital Brasileira de Teses e Dissertações. Foram incluídos estudos transversais conduzidos no ambiente hospitalar, publicados entre 2004 e 2024. Após seleção do material recrutado (n=1.297), a amostra (n=29) foi analisada por estatística descritiva.

Resultados: Dos estudos selecionados, 86,2% apontaram superioridade no percentual de cobertura de ausências preconizado pela entidade. As taxas de absenteísmo variaram de 0% a 44,7% entre enfermeiros e de 0,47% a 46% entre técnicos/auxiliares. O índice de segurança técnica estimado oscilou de 8,3% a 53% para enfermeiros e de 8,77% a 54,3% para profissionais de nível médio.

Considerações finais: Há evidências que sinalizam que o percentual mínimo de cobertura do absenteísmo (6,7%) previsto pela entidade regulamentadora não é suficiente, principalmente no âmbito de hospitais públicos.

Descritores: Absenteísmo; Equipe de enfermagem; Indicadores de serviços; Gestão de recursos humanos; Recursos humanos de enfermagem hospitalar.

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RESUMEN

Objetivo: Mapear la evidencia científica sobre la (in)adecuación del Índice Técnico de Seguridad proporcionado por el Consejo Federal de Enfermería para cubrir las tasas de ausentismo en la enfermería hospitalaria brasileña.

Método: Revisión de alcance realizada según los criterios del Instituto *Joanna Briggs*. La búsqueda se realizó en febrero de 2024, en las fuentes: Biblioteca Virtual en Salud, Biblioteca Electrónica Científica en Línea, *Web of Science*, *Scopus*, MEDLINE, Portal Periódico CAPES y Biblioteca Digital Brasileña de Tesis y Disertaciones. Se incluyeron estudios transversales realizados en el ámbito hospitalario, publicados entre 2004 y 2024. Después de seleccionar el material reclutado ($n=1.297$), la muestra ($n=29$) fue analizada mediante estadística descriptiva.

Resultados: De los estudios seleccionados, el 86,2% mostró superioridad en el porcentaje de cobertura de ausencias recomendado por la entidad. Las tasas de ausentismo oscilaron entre el 0% y el 44,7% entre las enfermeras y entre el 0,47% y el 46% entre los técnicos/asistentes. El índice de seguridad técnica estimado osciló entre 8,3% y 53% para los enfermeros y entre 8,77% y 54,3% para los profesionales de nivel medio.

Consideraciones finales: Existe evidencia que sustenta que el porcentaje mínimo de cobertura de ausentismo (6,7%) previsto por el ente regulador no es suficiente, especialmente en el contexto de los hospitales públicos.

Descriptores: Absentismo; Grupo de enfermería; Indicadores de servicios; Administración de personal; Personal de enfermería en hospital.

■ INTRODUCTION

Absenteeism is the absence of workers from the workplace when they were expected to be present⁽¹⁻²⁾. In the hospital environment, absenteeism is often associated with the fast pace, continuous shift work, and high physical and psychological occupational demands. These factors often lead professionals to take sick leave⁽³⁾.

The health sector has high absenteeism rates⁽⁴⁻⁶⁾, which is considered a chronic and global problem among professionals who make up the nursing team⁽⁷⁾. This scenario is linked to several factors, such as work overload due to a shortage of professionals, low wages and long working hours. Such adverse working conditions cause a significant increase in absenteeism, since the challenges faced in the work environment can trigger health problems that do not respond promptly to available treatments⁽⁸⁾.

The unexpected absence of nursing professionals requires hiring other employees and/or paying overtime to meet demand, which can impact the economic sustainability of the health system⁽³⁾. This also happens to assiduous professionals, who experience absenteeism as a factor of work overload, compromising both the financial stability of the institution and the quality of care provided to users⁽²⁾.

Given the problem of absenteeism in the Brazilian context, when calculating nursing staffing (NPS), it is recommended to use the Technical Safety Index (TSI), which implies an additional percentage to the number of nursing professionals estimated by category, intended to cover the absences of professionals⁽⁹⁻¹⁰⁾.

This coverage allows the composition of an adequate team for each type of service, assuming that absences in nursing, both planned and unplanned, are inevitable⁽¹¹⁾.

It is important to highlight that the minimum TSI, established in 2004⁽⁹⁾ by the Federal Nursing Council (COFEN), remains unchanged to this day, more than two decades later⁽¹⁰⁾. This minimum value is 15% of the staff, of which 8.33% represents coverage of expected absences and 6.67% to cover absenteeism⁽⁹⁻¹⁰⁾.

Without making any value judgments, it is postulated that the TSI was defined empirically by COFEN, with no clear explanations or evidence available in the literature to justify the minimum percentage stipulated. However, according to the entity, the absenteeism rate is obtained by calculating unplanned absences, resulting from various reasons, while planned absences are defined as planned absences related to benefits, such as vacations, special leaves, among others⁽⁹⁾. Although monitoring this information is valuable for nursing managers, it is believed that empiricism in determining a minimum coverage rate can seriously affect staff estimates.

Studies have identified high rates of absenteeism among nursing professionals, especially in hospitals, with values higher than the minimum parameter established by COFEN, indicating the need for an updated and expanded investigation into the problem⁽¹¹⁻¹⁵⁾. The high rates of this indicator imply the need to extend and intensify the working day, which is related to the decrease in the state of alertness and, consequently, to the increase in the incidence of adverse events⁽¹⁶⁻¹⁷⁾.

The justification for mapping and identifying hospital absenteeism rates is based on the need to verify whether the current minimum TSI of 15% recommended by the regulatory entity and, more precisely, the percentage of absence coverage, is in line with the reality of the profession. Thus, the objective of the present study is to map scientific evidence on the (in) adequacy of the Technical Safety Index established by the Federal Nursing Council to cover absenteeism rates in Brazilian hospital nursing. The aim is to support possible reformulations in the regulations regarding the provision of nursing staff, contributing to improvements in the quality of care and the quality of life at work of health professionals.

■ METHOD

This is a scoping review, reported according to the Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR) extension guidelines⁽¹⁸⁾, as well as outlined according to the methodology proposed by the Joanna Briggs Institute (JBI) for scoping reviews⁽¹⁹⁾. This study will answer the following question: “Does the scientific evidence regarding absenteeism rates in Brazilian hospital nursing support the parameterization of the technical safety index to cover these absences, as provided by the professional association?”

The research protocol, search schemes and reference lists of included studies were registered in the Open Science Framework® (OSF) (DOI: 10.17605/OSF.IO/EHJKN). Prior to submitting the protocol for this review, a preliminary search was carried out in MEDLINE, the Cochrane Database of Systematic Reviews and JBI Evidence Synthesis and no current or ongoing systematic reviews or scoping reviews on the topic were identified.

Data was collected in February 2024. This review was developed in the following databases: Virtual Health Library (VHL); Scientific Electronic Library Online (SciELO); Web of Science; Scopus; Medical Literature Analysis and Retrieval System Online (MEDLINE-via PubMed); and the Journal Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES). In addition, gray literature of theses and dissertations published in the Brazilian Digital Library of Theses and Dissertations (BDTD) was used. Therefore,

a total of seven direct data sources and one additional, which was the consultation of the list of references of the included studies.

All observational cross-sectional studies conducted in the hospital setting in Brazil between 2004 and 2024 were included, provided that they were available in full in electronic format and regardless of the language in which they were published. The choice of studies published after 2004 is justified, since this was when the recommendation of a minimum TSI of 15% was established⁽⁹⁾ and, since then, it has not been updated. Studies that did not provide details on the method used to calculate the absenteeism rate or that did not explicitly describe the rate of interest (or variations) in their results were excluded.

In the first stage, the PCC (Population, Concept and Context) strategy was defined⁽²⁰⁾. The population considered was the nursing team, the concept addressed were the absenteeism rates and their direct interference in the composition of the TSI; and the context investigated was the hospital environment, where nursing activities are carried out. Based on this, the guiding question and the objective of the study were formulated, as already stated.

In the second stage, the search strategy was developed in consultation with a professional librarian. The following Health Sciences Descriptors (DeCS) and Medical Subject Headings (MeSH) were selected: absenteeism and nursing. In addition, the keyword “Brazilian hospital nursing” was defined together with the librarian. All terms were used in Portuguese, English and Spanish, and combinations were performed using the Boolean operators AND and OR. Thus, searches in the databases occurred using standardized terms and their variations: (Absentéismo OR Absentismo OR Abstencionismo OR Absenteeism OR Ausentismo) AND (Enfermagem OR Nursing OR Enfermería OR Enfermeira OR Enfermeiros OR Nurses OR Enfermeras OR Equipe de Enfermagem OR Nursing, Team OR Grupo de Enfermería) AND (Enfermagem Hospitalar Brasileira OR Brazilian Hospital Nursing) AND (Enfermagem Hospitalar Brasileira OR Brazilian Hospital Nursing). Broader terms were used to increase the chance of finding a significant number of studies given that preliminary searches carried out in January 2024, with more specific terms (such as ‘Nursing Human Resources’, ‘Hospital Nursing Human Resources’

and 'Hospital Nursing Service') did not provide sufficient results to adequately meet the scope of this research.

In the third stage, the search of the relevant databases was carried out by the lead researcher and subsequently reviewed by the librarian to ensure the adequacy and comprehensiveness of the search strategy. The identified studies were imported to the Rayyan® software. At first, duplicates were removed. After a pilot test, the titles and abstracts were assessed by two independent reviewers against the established eligibility criteria. The selected studies were then read in full by the reviewers. Any disagreements between the reviewers were resolved by a third expert reviewer, ensuring that the final decisions were based on specialist knowledge of the area. The search results and the study inclusion process were presented in a flow diagram for scoping reviews⁽¹⁹⁾.

Data were extracted from the included articles by two independent reviewers, using a form developed for this purpose. The reviewers were previously trained to analyze the articles by an expert in the field, ensuring that the concepts were well established among them and minimizing possible gaps in data extraction, in order to ensure the rigor expected in the review. Detailed information and characteristics of the studies were collected, namely: authors, year and source of publication, region of Brazil and type of financing of the hospital institution. For the remaining data, the PCC strategy previously defined was followed: Population (professional category and sample size), Concept (theoretical basis of the method/equation for calculating absenteeism and absenteeism rates), Context (hospital sector(s) and time frame analyzed). The extracted data were summarized using tables.

To analyze the discrepancies between the absenteeism rates found in the studies and the value parameterized by COFEN⁽¹⁰⁾ (6.7%), two calculation estimates were performed. First, the difference between the absenteeism rate recommended by COFEN and the rate(s) found in the studies was calculated. To do this, the absenteeism rate of each study was subtracted from the rate recommended by COFEN. This calculation allowed us to observe the degree of variation in the absenteeism rates of the studies in relation to the

recommended value, identifying whether they were above or below the established standard. Thus, by interpreting the data, positive values indicated absenteeism rates higher than the minimum standard value established by COFEN. Negative values reflected absenteeism rates lower than the established reference value. In short, positive values indicated an inadequate coverage percentage, and negative values indicated that the minimum rate recommended by COFEN was lower than that found in each study.

In a second stage of analysis, the TSI was estimated for each of the studies. The formula recommended by COFEN was used for the calculation: $TSI = TB + TA$, where TB represents the rate of absence due to benefits (8.3%), unchanged since it was not the object of the study, and TA corresponds to the absenteeism rate found in each of the articles analyzed. The use of this formula made it possible to compare the TSI estimated in each study with the empirical value of 15% established by COFEN. This analysis allowed us to assess the (in)conformity of the TSI deduced from the data of the studies with the COFEN recommendations.

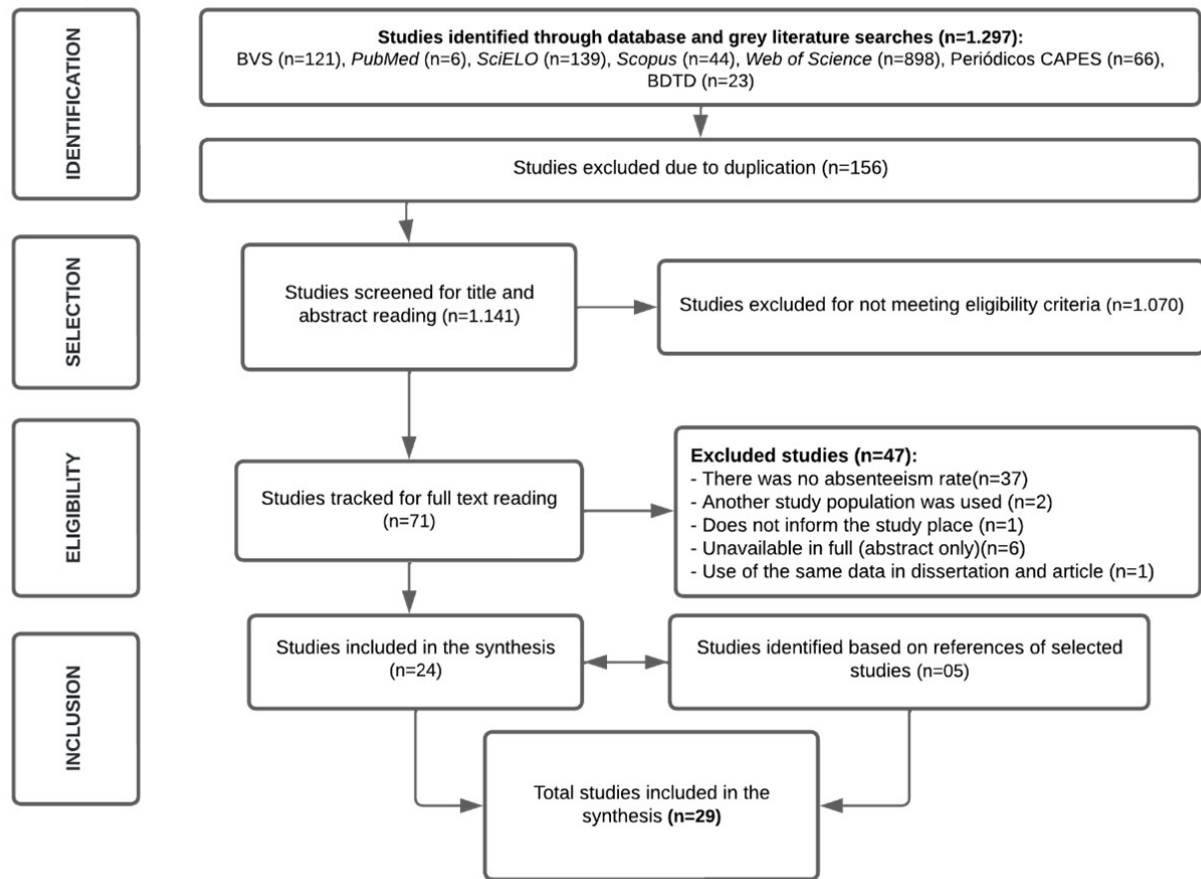
The data used in this study are in the public domain and do not involve direct human participation, exempting them from the obligation to be assessed by the Research Ethics Committee. However, it should be noted that the studies included in the sample were duly referenced and reported adherence to the applicable ethical precepts.

■ RESULTS

Through the search in databases and gray literature, 1,297 studies were selected for screening. After removing duplicate publications (n=156), 1,141 remained for the first selection phase (evaluation of titles and abstracts), of which 1,070 studies did not meet the eligibility criteria. The complete study selection process is illustrated in the flowchart in Figure 1.

Of the 29 studies selected, 18 (62%) are scientific articles, nine (31%) dissertations and two (7%) theses. Regarding the time period of publication, it was identified that 20 (69%) were published during the first decade (2004-2014) and 9 (31%) in the second decade (2015-2024). Most of the studies took place in public

Figure 1. Flowchart of the study selection process for scoping review, adapted from PRISMA-ScR. Porto Alegre, Rio Grande do Sul, Brazil, 2024



Source: Adaptation of PRISMA-ScR ⁽¹⁸⁾

Caption: BVS: Virtual Health Library; SciELO: *Scientific Electronic Library Online*; CAPES: Foundation for the Coordination of Improvement of Higher Education Personnel; BDTD: Brazilian Digital Library of Theses and Dissertations.

hospital institutions, with the exception of one study ⁽²¹⁾ developed in a philanthropic hospital institution.

Regarding the distribution of studies in the hospital sector, the highest percentage occurred in all hospital sectors (n=12, 41%), followed by publications carried out exclusively in clinical-surgical inpatient units (n=6, 21%) and adult Intensive Care Unit/Center (ICU/CTI) (n=5, 17%). Other characteristics of the studies are presented in Chart 1.

Nearly half of the studies (n=14, 48%) used the methodology proposed by Gaidzinski to calculate absenteeism rates. In addition, the methods proposed by Chiavenato (n=4, 14%), NAGEH (n=4, 14%), COFEN (n=2, 6.9%), GGIRH (n=1, 3.7%) were used, as well as the equations for Proportion of Time Lost Rate (n=2,

6.9%), Percentage of Absenteeism (n=1, 3.4%) and an equation developed in the study itself (n=1, 3.4%). Chart 2 shows the equations used in the studies.

Absenteeism rates among nurses found in the studies ranged from 0% to 44.7%. Among nursing technicians and assistants, the indicator ranged from 0.47% to 46%. The TSI calculated among nurses ranged from 8.3% to 53%. Among mid-level professionals, the rate remained between 8.77% and 54.3%. In general, 86.2% (N=25) of the studies indicated higher than the percentage of absence coverage recommended by the entity. Chart 3 shows the rates found in the studies, in addition to the comparison with the percentage predicted by COFEN and the estimated IST.

Chart 1. Characteristics of the studies included in the scoping review. Porto Alegre, Rio Grande do Sul, Brazil, 2024.

Authors/Reference (Year)	Source	Calculation method/Equation	Region of Brazil	Sample	Sector	Time frame
Passos ⁽²²⁾ (2014)	Tese - repositório USP	Equation proposed by the Hospital Management Support Center (NAGEH)	Southeast	2010 - 506 nurses and 907 NTA; 2011 - 505 nurses and 965 NTS	All sectors of the hospital	Years 2010 and 2011
Kurcgant <i>et al.</i> ⁽²³⁾ (2015)	Rev. da escola de enfermagem da USP	Equation proposed by NAGEH	Southeast	Team (no size)	Clinical-surgical hospitalization	August 2013 to July 2014
Leitão <i>et al.</i> ⁽¹⁴⁾ (2017)	Brazilian Journal of Nursing	Equation proposed by NAGEH	North East	32 nurses and 38 NTA	Adult ICU	February, March and April 2016
Alves <i>et al.</i> ⁽¹⁵⁾ (2022)	Rev. Texto & Contexto Enfermagem	Equation proposed by NAGEH	South	Team through absence records 2019 (no. 622) and 2020 (no. 475)	All sectors of the hospital	March, April and May 2019 and the same months in 2020
Inoue, Matsuda, Silva ⁽²⁴⁾ (2008)	Rev. Ciência, Cuidado e Saúde	Equation proposed by Chiavenato	South	56 (15 nurses and 41 NTA)	Adult ICU	Year 2006
Abreu ⁽²⁵⁾ (2009)	Dissertação - repositório UFTM	Equation proposed by Chiavenato	Southeast	52 nurses, 182 technicians, 131 assistants	All sectors of the hospital	February to June 2009
Oliveira ⁽²⁶⁾ (2014)	Dissertação - Repositório UFMG	Equation proposed by Chiavenato	Southeast	1,056 (899 NTA and 157 nurses)	All sectors of the hospital	Year 2013
Silva ⁽²⁷⁾ (2018)	Dissertação - Repositório UFMG	Equation proposed by Chiavenato	Southeast	294 (58 nurses, 212 technicians and 24 assistants)	Emergency Room	Year 2016

Chart 1. Cont.

Authors/Reference (Year)	Source	Calculation method/Equation	Region of Brazil	Sample	Sector	Time frame
Matsushita, Adami, Carmagnani ⁽²⁸⁾ (2005)	Rev. Acta Paulista de Enfermagem	Equation proposed by Gaidzinski	Southeast	Team (no size)	Clinical-surgical hospitalization	Year 2001
Rogensky ⁽²⁹⁾ (2006)	Dissertação repositório USP	Equation proposed by Gaidzinski	Southeast	Team (no size)	All sectors of the hospital	Years 2001 to 2005
Rogensky, Fugulin ⁽³⁰⁾ (2007)	Rev. da escola de enfermagem da USP	Equation proposed by Gaidzinski	Southeast	Team (no size)	Pediatric hospitalization	January 2001 to December 2005
Cucolo, Perroca ⁽²¹⁾ (2008)	Rev. Acta Paulista de Enfermagem	Equation proposed by Gaidzinski	Southeast	Team (no size)	Clinical-surgical hospitalization	Year 2006
Laus, Anselmi ⁽³¹⁾ (2008)	Rev. da escola de enfermagem da USP	Equation proposed by Gaidzinski	Southeast	Team (no size)	Clinical-surgical hospitalization	April 2001 to March 2002
Campos, Juliani, Palhares ⁽³²⁾ (2009)	Rev. Eletrônica de Enfermagem da Universidade Federal de Goiás	Equation proposed by Gaidzinski	Southeast	56 NTA	Emergency Room	January 2006 to June 2007
Sancinetti ⁽³³⁾ (2009)	Tese repositório da USP	Equation proposed by Gaidzinski	Southeast	647 (174 nurses; 257 technicians; 208 assistants and eight nursing attendants)	All sectors of the hospital	Year 2007
Sancinetti <i>et al.</i> ⁽³⁴⁾ (2011)	Rev. da escola de enfermagem da USP	Equation proposed by Gaidzinski	Southeast	Team 613	All sectors of the hospital	January to July 2008

Chart 1. Cont.

Authors/Reference (Year)	Source	Calculation method/Equation	Region of Brazil	Sample	Sector	Time frame
Rovere ⁽³⁵⁾ (2012)	Dissertação - repositório UNESP	Equation proposed by Gaidzinski	Southeast	336 professionals in 2009 and 346 in 2010	Inpatient, ICU and emergency units	Years 2009 and 2010
Formenton ⁽³⁶⁾ (2014)	Dissertação - repositório da USP	Equation proposed by Gaidzinski	Southeast	102 (nurses, 29 technicians and 41 assistants)	Adult Intensive Care Center	Year 2013
Nicola, Anselmi ⁽³⁷⁾ (2015)	Rev. Brasileira de Enfermagem	Equation proposed by Gaidzinski	South	31 nurses, 25 technicians and 216 assistants	Clinical-surgical hospitalization	October 2002 to September 2003
Coelho <i>et al.</i> ⁽¹²⁾ (2016)	Rev. Uruguaya de Enfermería	Equation proposed by Gaidzinski	Midwest	Team (no size)	Clinical-surgical hospitalization	Year 2011
Trettene <i>et al.</i> ⁽¹¹⁾ (2020)	Rev. da Escola de Enfermagem da USP	Equation proposed by Gaidzinski	Southeast	99 (21 nurses and 78 NTA)	All sectors of the hospital	Year 2016
Grejo <i>et al.</i> ⁽¹³⁾ (2022)	Rev. de Enfermagem da UERJ	Equation proposed by Gaidzinski	Southeast	95 (21 nurses and 74 NTA)	All sectors of the hospital	Year 2019
Inoue <i>et al.</i> ⁽³⁸⁾ (2008)	Rev. Brasileira de Enfermagem	Lost Time Proportion (LTP) Rate	South	56 (15 nurses and 41 NTA)	Adult ICU	Year 2006
Fakih, Tanaka, Carmagnani ⁽³⁹⁾ (2012)	Rev. Acta paulista de enfermagem	PTP rate	Southeast	96.8% nursing staff, distributed as follows: 17.7% nurses and 82.3%	Adult emergency room	Year 2009

Chart 1. Cont.

Authors/Reference (Year)	Source	Calculation method/Equation	Region of Brazil	Sample	Sector	Time frame
Becker, Oliveira ⁽⁴⁰⁾ (2008)	Rev. Latino-americana de enfermagem	COFEN Resolution No. 293/2004	North	43 assistants, 6 technicians and 11 nurses	Psychiatric center	January 2004 to January 2005
Lima ⁽⁴¹⁾ (2011)	Dissertação - repositório UFG	COFEN Resolution No. 293/2004	Midwest	Team 549	All sectors of the hospital	Years 2005 to 2009
Marques ⁽⁴²⁾ (2018)	Dissertação - repositório UFU	Absenteeism percentage (AP)	Southeast	774 (133 nurses, 435 technicians, 206 assistants)	All sectors of the hospital	Year 2016
Riboldi ⁽⁴³⁾ (2008)	Dissertação repositório LUME UFRGS	Human Resources Information Management Human Resources Information Management Group (GGIRH)	South	1535 (329 nurses, 590 technicians and 616 assistants)	All sectors of the hospital	October 2006 to September 2007
Carneiro, Fagundes ⁽⁴⁴⁾ (2012)	Rev. de Enfermagem da UERJ	Equation described in the study itself	North East	23 nurses and 41 NTA	Adult ICU	Year 2009

Source: Research data (2024).

Legend: Rev. = Magazine; NTA = Nursing technicians/assistants

Chart 2 - Equations used to calculate absenteeism rates for studies included in the scoping review. Porto Alegre, Rio Grande do Sul, Brazil, 2024.

Theoretical basis of the calculation method/Equation	Equation formula	Studies that used the method
Equation proposed by NAGEH ⁽⁴⁵⁾	$TA = \frac{\text{Absenteeism rate (AR)} \\ \text{No. of hours/man absent}}{\text{number of hours/man worked}} \times 100$	(14-15,22-23)
Equation proposed by Chiavenato ⁽⁴⁶⁾	$AI = \frac{\text{Absenteeism rate (AI)} \\ \text{number of working days lost}}{\text{average workforce} \times \text{number of days worked}} \times 100$	(24-27)
Equation proposed by Gaidzinski ^(8,47)	Unplanned absences due to absenteeism $Ak\% = (\sum i ak,i / D - \sum i ak,i) \times 100$ Where: Ak% = percentage of unforeseen absences, according to professional category k (nursing technicians and assistants). i ak,i = sum of days, average of unforeseen absences, according to the types of absences, by category of professionals. D = days of the year, 365 days.	(11-13,21,28-37)
LTP rate ⁽⁴⁸⁾	$PTP = \frac{\text{Lost Time Proportion (LTP) rate} \\ \text{No. of lost workdays in the period} \times 100}{\text{number of scheduled working days in the period}}$	(38-39)

Chart 2. Cont.

Theoretical basis of the calculation method/Equation	Equation formula	Studies that used the method
COFEN Resolution No. 293/2004 ⁽⁹⁾	$AR = \frac{\text{Absenteeism rate}}{500[6(FM1) + 8(FM) + 12(FP)]}$ $JST \times TF \times TD$ Where: FM1: absences from work, in the morning (7am to 1pm) or afternoon (1pm to 7pm); FM: absences from work in the morning and afternoon shifts; FP: absences from work during the day shift (7am to 7pm) or night shift (7pm to 7am); WWH: Weekly working hours; TE: Total Employees; TD: Total working days in the period.	(40-41)
Absenteeism percentage (AP) ⁽⁴⁹⁾	$AP = \frac{\text{Absenteeism percentage (AP) days lost} \times 100}{(\text{number of servers} \times \text{number of working days})}$	(42)
Human Resources Information Management Group ⁽⁴³⁾	$AR = \frac{\text{Absenteeism rate number of hours of absences} \times 100}{\text{expected hours}}$	(43)
Equation described in the study ⁽⁴⁴⁾	$TA = \frac{\text{Absenteeism rate monthly number of absences of workers in the category}}{\text{total number of employees in category} \times \text{days worked in the month}} \times 100$	(44)

Source: Prepared by the authors (2024).

Chart 3. Absenteeism rates, difference in percentage predicted by the Federal Nursing Council and estimated Technical Safety Index. Porto Alegre, Rio Grande do Sul, Brazil, 2024.

ID	Minimum Absenteeism Rate (%)			Maximum Absenteeism Rate (%)			Overall Absenteeism Rate (%)			Difference in COFEN coverage percentage (6.7%)*						Estimated TSI †					
	Nurses	NTA	Team	Nurses	NTA	Team	Nurses	NTA	Team	Nurses		NTA		Team		Nurses	NTA	Team			
										Min	Max	Min	Max	Min	Max						
(22)	-	-	0 (2010)	-	-	18.5 (2010)	-	-	-	-	-	-	-	-6.7	+11.8	-	-	8.3	26.8		
			0 (2011)			22.2 (2011)								-6.7	+15.5			8.3	30.5		
(23)	3.2	4.3	-	4.5	8.1	-	-	-	-	-3.5	-2.2	-2.4	+1.4	-	-	11.5	12.8	12.6	16.4	-	
(14)	3.22	4.62	-	9.41	12.52	-	-	-	-	-3.48	+2.71	2.08	+5.82	-	-	11.52	17.71	12.92	20.82	-	
(15)	-	-	-	-	-	-	-	-	13.9 (2019)	-	-	-	-	+7.2 (2019)	-	-	-	-	22.2 (2019)		
									18.6 (2020)					+11.9 (2020)					26.9 (2020)		
(24)	0.38	0.65	0.13	5.53	9.68	8.36	-	-	-	-6.32	-1.17	-6.05	+2.98	-6.57	+1.66	8.68	13.83	8.95	17.98	8.43	16.6
(25)	-	-	-	-	-	-	4.84	‡ 4.43	-	-1.86	-	-	-	-	-	13.14	-	‡ 12.73	-		
								§ 7.72										§ 16.02			
(26)	1.7	2.8	-	7.4	16.3	-	-	-	-	-5	+0.7	-3.9	+9.6	-	-	10	15.7	11.1	24.6	-	

Chart 3. Cont.

ID	Minimum Absenteeism Rate (%)			Maximum Absenteeism Rate (%)			Overall Absenteeism Rate (%)			Difference in COFEN coverage percentage (6.7%)*						Estimated TSI †					
	Nurses	NTA	Team	Nurses	NTA	Team	Nurses	NTA	Team	Nurses		NTA		Team		Nurses	NTA		Team		
										Min	Max	Min	Max	Min	Max						
(27)	-	-	-	-	-	-	6.6	±8.7	8.0	-0.1		±+2		+1.3	14.9		±17		16.3		
								§4.5				§-2.2					§12.8				
(28)	0.5	0.7	-	17.0	12.4	-	-	-	-	-6.2	+10.3	-6	+5.7	-	8.8	25.3	9	20.7	-		
(29)	1.6	2.4	-	5	13	-	-	-	-	-5.1	-1.7	-4.3	+6.3	-	9.9	13.3	10.7	21.3	-		
(30)	27.4	31.8	-	44.7	40.4	-	-	-	-	+20.7	+38	+25.1	+33.7	-	35.7	53	40.1	48.7	-		
(21)	0.6	2.8	-	11.5	6.7	-	-	-	-	-6.1	+4.8	-3.9	0	-	8.9	19.8	11.1	15	-		
(31)	0	0.47	-	12.39	11.60	-	-	-	-	-6.7	+5.69	-6.23	+4.9	-	8.3	20.69	8.77	19.9	-		
(32)	-	-	-	-	-	-	-	-	14 (2006)	-		-		+7.3		-		-		22.3	
									11 (2007)					+4.3							19.3
(33)	-	-	-	-	-	-	1.8	±3.7	5.3	-4.9		±-3		-1.4	10.1		±12		13.6		
								§10.6				§+3.9					§18.9		-		
(34)	-	-	-	-	-	-	5.6	9.7	8.7	-1.1		+3		+2	13.9		18		17		

Chart 3. Cont.

ID	Minimum Absenteeism Rate (%)			Maximum Absenteeism Rate (%)			Overall Absenteeism Rate (%)			Difference in COFEN coverage percentage (6.7%)*						Estimated TSI †		
	Nurses	NTA	Team	Nurses	NTA	Team	Nurses	NTA	Team	Nurses		NTA		Team		Nurses	NTA	Team
										Min	Max	Min	Max	Min	Max			
(35)	-	-	-	-	-	-	1.4 (2009 e 2010)	±2.8 (2009) 3.1 (2010)	-	-5.3			±-3.9 (2009) -3.6 (2010)		-	9.7	±11.1 (2009) 11.4 (2010)	-
								§ 1.7 (2009) 2.8 (2010)					§-5 (2009) -3.9 (2010)				§10 (2009) 11.1 (2010)	-
(36)	-	-	-	-	-	-	4.14	14.69	-	-2.56			+7.99		-	12.71	22.9	
(37)	-	-	-	-	-	-	8.23	9.27	-	+1.53			+2.57		-	16.53	17.57	-
(12)	-	-	-	-	-	-	42.96	12.97	-	+36.26			+6.27		-	51.26	21.27	-
(11)	-	-	-	-	-	-	12	9	-	+5.3			+2.3		-	20.3	17.3	-
(13)	-	-	-	-	-	-	3	7.56	10.56	-3.7			+0.86		+3.86	11.3	15.86	18.86
(38)	-	-	-	-	-	-	1.21	1.98	-	-5.49			-4.72		-	9.51	10.28	-
(39)	-	-	-	-	-	-	3.7	13.4	-	-3			+6.7		-	12	21.7	-
(40)	-	-	-	-	-	-	2.93	±1.81	-	-3.77			±-4.89		-	11.23	±10.11	-
								§ 3.92					§ -2.78				§ 12.22	

Chart 3. Cont.

ID	Minimum Absenteeism Rate (%)			Maximum Absenteeism Rate (%)			Overall Absenteeism Rate (%)			Difference in COFEN coverage percentage (6.7%)*						Estimated TSI †				
	Nurses	NTA	Team	Nurses	NTA	Team	Nurses	NTA	Team	Nurses		NTA		Team		Nurses	NTA	Team		
										Min	Max	Min	Max	Min	Max					
(41)	3.21	‡ 6.5	-	6.71	‡ 11.83	-	-	-	-	-3.49	+0.1	‡ -0.2	‡ +5.13	-	11.51	15.01	‡ 14.8	* 20.13	-	
		\$6.07			\$12.28							\$-0.63	\$+5.58				\$ 14.37	\$ 20.58		
(42)		-	-	-	-	-	-	-	8.9	-	-	-	-	+2.2	-	-	-	-	17.2	
(43)	-	-	-	-	-	-	-	-	2.97	-	-	-	-	-3.73	-	-	-	-	11.27	
(44)	8	12	-	30	46	-	-	-	-	+1.3	+23.3	+5.3	+39.3	-	16.3	38.3	20.3	54.3	-	

Source: Prepared by the authors (2024).
 * Product of subtracting the rate verified in the study from the rate parameterized by COFEN (6.7%)(10).
 † Sum of the study absenteeism rate with the predicted absence rate parameterized by COFEN (8.3%)(10).
 ‡ Value for nursing technicians.
 \$Value for nursing assistants.
 Legend: NTA = Nursing technicians/assistants.
 ID: Identification of the study analyzed.
 Min.: smallest difference in the COFEN coverage percentage.
 Max.: biggest difference in COFEN coverage percentage.

■ DISCUSSION

The results of this review revealed a wide variation in absenteeism rates among nursing professionals, with values for nurses ranging from 0% to 44.7%, while for nursing technicians and assistants, the values ranged from 0.47% to 46%. This variation can be attributed to multiple factors, which demonstrates the complexity of the phenomenon, including the way in which work is organized in nursing and its psychosocial impacts, considered important factors related to absenteeism^(7,50). In addition, sociodemographic, lifestyle, and work factors, such as shift work, smoking, history of mental illness, or use of psychotropic medications, increase the likelihood of absenteeism⁽⁵⁰⁾.

Unlike the variation in absenteeism rates observed, the almost unanimous number of research scenarios focused on the public sector was an extremely homogeneous finding. This does not mean that nursing professionals in public hospitals are absent more than workers in the private sector, but it probably means that research on this subject is concentrated in the public sector. It should be stressed that investing in surveys on nursing absenteeism in the private and philanthropic sectors is important to devise more effective means of managing this indicator, in addition to managing absenteeism itself, since it is mainly directed at the health of workers.

It is known that public sector professionals have greater job stability, which tends to reduce turnover and, from certain perspectives, can facilitate absence from work. Private sector hospitals tend to have greater variation in turnover rates, explained by restrictions in labor legislation on hiring and dismissing civil servants⁽⁵¹⁾. The logic that this stability can favor increased absenteeism is, in a way, reductionist; but it still needs to be tested.

When considering the discrepancy between the production of studies in the public and private sectors in the sample of articles analyzed in this review, the economic dimension of absenteeism comes to light. A study⁽⁵²⁾ conducted in Paraíba aimed to estimate the direct costs of a retrospective cohort of hospital employees with illnesses that led to absence from work during the Covid-19 pandemic. It was estimated that a single day of absence from work required an average cost of

R\$1,201.76. Total expenses from March to December 2020 were R\$2,603,017.95. The nursing category was the one that incurred the highest expenditure⁽⁵²⁾, reiterating the need for investment in promoting health at work and the quality of the work environment for and within the nursing and health team. Furthermore, it ratifies the need to parameterize a percentage of coverage for these absences that is compatible with both the real situation of absences and the sustainability of organizations.

A Brazilian cohort study conducted in an emergency unit of a public hospital found that the more unfavorable the work environment, the greater the chance of not showing up for work⁽⁵³⁾. Characteristics such as the relationship between physicians and nursing staff, nursing leadership style, and adequacy of human resources are constituent elements of the nursing practice environment⁽⁵⁴⁾. When an employee's work environment is evaluated positively, they are less likely to be absent from work. Satisfaction with the practice environment and the perception of an adequate safety climate contribute to greater commitment and presence at work⁽⁵⁵⁾, which can contribute to reducing absenteeism in nursing.

Favorable aspects of the work environment that facilitate activities tend to promote an environment with greater professional engagement, autonomy, leadership, and greater satisfaction for those who work there⁽⁵⁶⁾. On the other hand, an unfavorable environment results in demotivation, reduced productivity, emotional exhaustion, high turnover, health problems among workers, and unsafe practices⁽⁵⁷⁻⁵⁹⁾. All these factors related to the work environment may be directly related to the results found in this study, reflecting the great variation in absenteeism rates observed, since the studies were conducted in hospital settings with different realities.

Of the 29 studies included in the review, 25 (86.2%) had TSIs higher than the 15% stipulated by COFEN⁽¹⁰⁾. This discrepancy indicates that the frequent absence of nursing professionals was above the coverage percentage recommended by the regulatory entity (6.7%). As they do not have the personnel to cover team absences, nursing managers tend to resort to strategies such as requesting overtime, reallocating between sectors or even redistributing the work among the members

present. In addition to placing a massive burden on institutions, this cycle favors worker exhaustion, increasing the risk of errors and compromising the safety of the care provided⁽¹⁶⁻¹⁷⁾.

Among the types of absences, absenteeism due to illness stands out among the nursing team, with these professionals predominantly affected by diseases of the musculoskeletal system and mental/behavioral/psychological disorders. These problems are often attributed to work overload, unhealthy working conditions, worker burnout and inadequate workforce sizing⁽⁶⁰⁻⁶¹⁾.

The association between psychosocial, sociodemographic factors and working conditions contributes significantly to absenteeism rates among nursing professionals⁽⁶²⁻⁶⁴⁾. Thus, the singularities of institutions and samples of professionals should be considered during the analysis of absenteeism; this may justify the differences in rates observed between the studies in this scoping review, given that they were conducted in different regions of Brazil, hospital sectors, time frames and samples of the nursing team.

Another factor to consider is the method of calculating nursing absenteeism. Although COFEN has indicated a specific equation for calculating absenteeism for over two decades⁽⁹⁾, the scope review revealed that, in practice, several formulas are used. Among them, the Gaidzinski equation is one of the most widely adopted, corroborating a recent study that identified the method as one of the most widely used in nursing personnel planning⁽⁶⁵⁾. It is understood that the diversity in the formulas can result in variations in the reported absenteeism rates, which can hinder the comparison of data and the definition of interpretative parameters.

Before 2004, COFEN already recommended the use of the IST, however, in a different way compared to the current guidelines. In 1996, COFEN established, through Resolution No. 189/1996, that, in order to guarantee adequate coverage of nursing staff, the IST should not be less than 30%. This rate was updated to 15% (8.3% for planned absences and 6.7% for unplanned absences) and has remained the same since 2004^(9,66).

However, both these resolutions and the subsequent ones dealing with staffing parameters did not specify the methods or equations used by the professional association to determine this coverage percentage, indicating that the value was defined empirically. In

contrast, the data from this review indicate that the minimum percentage of 15% is often not sufficient to meet the coverage needs of health institutions, reflecting a possible inadequacy in the parameter used^(11-14,21-34,36-42,44).

Some Brazilian researchers have already argued that individual monitoring of institutional absenteeism and, consequently, of the IST, is an important management indicator. The discrepancies in values from institution to institution demonstrate the need for managers to calculate this index in order to accurately assess the staffing levels in line with the reality of the services⁽¹¹⁾. This divergence between institutions, as well as in relation to the values recommended by the professional association, suggests that the application of a fixed IST may not be ideal for all institutions, and that developing and adjusting one's own IST would be a more rational alternative. It is understood that this personalized approach would allow for a more precise analysis of absences in the nursing team and, consequently, of the needs of each institution, promoting more targeted interventions to reduce absenteeism and ensure the necessary coverage of professionals.

The limitations of this study include the presence of studies conducted only in the context of public services and the variety of methods and equations used to calculate the absenteeism rate, as well as the way in which data from professional groups were arranged, which made it impossible to perform calculations that could provide more conclusive answers, such as an average estimate of the percentage of coverage. Despite this, the particularities inherent to each institution were highlighted as a factor that corroborates the development and adjustment of a specific IST for assertive dimensioning.

■ FINAL CONSIDERATIONS

The present study aimed to map scientific evidence on the (in)adequacy of the technical safety index established by COFEN to cover absenteeism rates in Brazilian hospital nursing. The mapping carried out indicates that the coverage percentage (6.67%) of the minimum IST parameterized (15%) by the regulatory entity for the dimensioning of the hospital nursing workforce is not adequate to the absenteeism rates

observed nationwide and in different sectors and hospital institutions in Brazil, especially in the public sector and among mid-level professionals. In more than 85% of the selected studies, the IST was higher than that currently recommended. This finding highlights an important discrepancy, indicating that the IST defined by COFEN may be underestimated in relation to the reality observed in the literature.

A wide variation was observed in the equations used to estimate absenteeism rates, which may make comparisons between studies difficult. In addition, this phenomenon represents a possible discrepancy with COFEN standards, which already recommend the use of a methodology to calculate absenteeism rates. Thus, the results of this study represent a key step towards the review and standardization of the parameters established by COFEN for coverage of absences of nursing professionals. It is understood that an adequate coverage percentage is directly linked to safer and more qualified professional practice, reducing the occurrence of errors and ensuring better working conditions and nursing care.

Although sufficient evidence has been synthesized to infer that the percentage of coverage of professional absences is insufficient for public hospitals, suggesting its review, it is recommended that the professional association invest in providing technological means so that nursing managers can measure absenteeism in a simplified manner and, consequently, avoid empirical IST when dimensioning their teams.

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The authors declare that there is no conflict of interest.

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