Interventions to reduce patient identification errors in the hospital setting: a systematic review protocol

Introduction

Patient identification is considered as an important initial part of the care process in health institutions, as well as an essential safety resource and, if correctly performed and used, it assists in the prevention of errors and serious harm to patients.[1,2] Failures in patient identification have been recognized as the root cause of many problems. Moreover, misidentification can seriously affect the provision of health services, and thus additional efforts should be concentrated on reducing this important source of preventable medical errors.[3] In that event, Joint Commission on Accreditation of Healthcare Organisations (JCAHO)[4] has listed improved patient identity accuracy as the first of its national patient safety objectives, introduced in 2003, and this remains a requirement, to ensure patient safety, quality of services and accreditation of the health unit.

Patient identification can be defined as "first a reliable identification of the individual as the person for whom the service or treatment is intended; second to match the service or treatment to that individual".[5(p. 1)] Identification errors may also be classified into three major categories: incorrect patient identification, incorrect body part identification and use of biological materials from the wrong patient. The first category consists of possible incompatibility of name, identification documents, number and social security codes, the second relates to therapeutic interventions in the wrong place (for instance surgical procedures), while the third question covers the analysis of pathological specimens, and other biological fluids from the wrong patients.[3] This systematic review will focus on the first category: the incorrect patient identification.

There have been several pieces of research that have evidenced the occurrence of errors of patient identification. A multicenter study conducted in 712 hospitals in the United States examined 2,463,727 identification wristbands and 67,289 (2.7%) errors were identified, of which, 49.5% due to the absence of ID bands.[6] The same study was also duplicated in 204 small hospitals, where 451,436 identification wristbands were examined and 28,800 (5.7%) had errors. Again, the most common (64.4%) were related to the absence of bracelets.[7] The National Patient Safety Agency[8] in the United Kingdom documented, between June 2006 and August 2008, 1,309 incidents related to errors in patient identification, with the vast majority (97%) occurred in hospitals. In Australia, between 2004 and 2008, 487 incidents in various health services were related to patient identification.[9] In a Brazilian hospital, 385 patients were analyzed. Of these, 11.9% had errors in identification wristbands and 4.2% did not present any type of identification.[10] In the same country, another study evaluated 800 patients and identified that the conformity of the identification wristbands in the obstetric clinic was 58.5% and 22.3% in the obstetric surgical center.[2]

The Emergency Care Research Institute[11] (ECRI) conducted an extensive research between 2013 and 2016 at 181 health organizations, in various countries, and examined 7,613 cases of misidentification. The events included near misses as well as adverse events. A report supported by the Joint Commission[12] (JC) listed a total of 409 sentinel events of patient identification out of 3.326 incidents looked over the years 2014-2017 (12.3%).

In the light of this evidence, there is an evident need for interventions that involve the multidisciplinary team and the patients themselves to reduce patient identification errors. Several initiatives and strategies have been made that aim to ensure that the patient is correctly identified, and all his or her data are checked before any intervention to promote safer care and facilitate the process of decision-making in health.

The College of American Pathologists Q-Tracks study showed that error rates on patient ID bracelets decreased as these indicators were continuously monitored and audited over a two-year period. This same study identified error rates as high as 18.8% in adult health setting.[13] Additionally, research findings suggest educational initiatives with the health workforce and improvements in the identification process, in a hospital, can ensure the accuracy of patient identification wristbands.[14] This study reported initial error rates of 8.2%, which were reduced to zero and maintained for 15 months after the measures were implemented.[14] Hain *et al*.[15] have demonstrated that a multidisciplinary approach to quality improvement and maintenance can effectively reduce rates of patient identification errors.

World Health Organisation[16] (WHO) suggests a number of strategies that should be considered in all health organizations to ensure a correct identification of patients, such as, emphasizing the responsibility of health professionals to verify the identity of patients before care or treatment is performed. It encourages the use of at least two identifiers (for example, name and date of birth) to verify the patient's identity after admission or transfer to another hospital or other care facility and prior to the delivery of care. The document also suggests the standardization of patient identification methods within the same health organization as well as the implementation of technological resources. It advises that clear protocols should be introduced for the identification of homonymous patients. It encourages the patient participation in all stages of the identification process. Training on procedures to correctly verify a patient's identity should be introduced along with guidance for the workforce about the importance and relevance or correct identification.[16]

More recent studies also address similar patient identification interventions. The use of two or more identifiers for medical or therapeutic interventions; use of appropriate and reliable identifiers; education and training of health personnel regarding the proper implementation and maintenance of the patient identification process; encouraging the investment of technological resources to increase the safety in the identification process are all recommended.[3,17] Furthermore, researches advise standardization of the patient identification process, fostering a safety culture between the multidisciplinary team and patients in order to ensure correct patient identification, effective implementation and monitoring of patient identification protocols.[18,19]

A preliminary search of literature was conducted in February 2018 and included the JBI Database of Systematic Reviews and Implementation Reports, Cochrane Database of Systematic Reviews, MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and International Prospective Registers of Systematic Review (PROSPERO). Some reviews have been identified, that focus on the use of technology such as barcode and Radio Frequency Identification Technology (RFID)-based patient tracking systems to improve patient safety and efficiency.[20,21] Others, address the active participation of the patient in reducing errors.[22,23] However, none of these reviews focus on the effectiveness of the various interventions considered by the WHO[16] in reducing patient identification errors and they only compile evidence on the effectiveness of one or two-point interventions. Thus, this review proposes to broaden the theme, considering all possible strategies evaluated in the studies as to their effectiveness in reducing or preventing errors in identifying the patient, both in the adult and in the pediatric hospital setting.

Review Question

How effective are the interventions that may prevent or reduce patient identification errors in the hospital setting?

Keywords

Hospital; Inpatients; Patient Identification Systems; Patient Safety; Wristbands.

Inclusion Criteria

Participants

The review will consider studies that include children and adults of any age, race, ethnicity, or gender who were admitted to inpatient hospital services for any health or disease condition.

Intervention(s)

This review will consider studies that will evaluate the use of strategies to reduce patient identification errors such educational programmes and use of technology. These interventions are based on the WHO[16] report, and are as follows: use, at least, two identifiers to verify patient's identity, implementation of technological resources and tools, education of frontline staff regarding correct Identification band and partnering with families and patients through education.

Comparator(s)

This review will consider studies that compare the interventions to alternative or different interventions or the absence of interventions.

Outcomes

This review will consider studies that include the following outcomes: reported patient identification errors rates as measured by the number of patient identification incidents during a hospital stay and causes of patient identification errors in the hospital setting.

Study types

This review will consider both experimental and quasi-experimental study designs including randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. This review will also consider descriptive observational study designs including case series, individual case reports and descriptive cross-sectional studies for inclusion. Studies published in English, Portuguese and Spanish languages will be considered for inclusion in this review. In addition, all studies published at any time will be considered for inclusion in this review.

Methods

This systematic review will be conducted in accordance with the Joanna Briggs Institute methodology for systematic reviews of effectiveness evidence[24]. This review is registered on PROSPERO with registration number CRD42018085236.

Search strategy

The search strategy aims to find both published and unpublished studies. An initial limited search of MEDLINE and CINAHL has been undertaken followed by analysis of the text words contained in the title and abstract, and of the index terms used to describe articles. This informed the development of a search strategy which will be tailored for each information source. A full search strategy for MEDLINE using keyword is detailed in Appendix I. The reference list of all studies selected for critical appraisal will be screened for additional studies.

Information sources

The databases to be searched will include: MEDLINE via PubMed, CINAHL, Excerpta Medica Database (EMBASE), Scopus, Latin American and Caribbean Health Sciences Literature (LILACS).

The trial registers to be searched will include: Cochrane Central Trials Register of Controlled Trials

The search for unpublished studies will include: ProQuest Dissertation and Thesis, Google Scholar, MedNar, NHS Improvement, Dart-e, System for Information on Grey Literature in Europe (Open Grey), Banco de Teses-CAPES.

Study selection

Following the search, all identified citations will be collated and uploaded into Endnote (Clarivate Analytics, PA, USA) and duplicates removed. Titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria for the review. Studies that may meet the inclusion criteria will be retrieved in full and their details imported into Joanna Briggs Institute System for the Unified Management, Assessment and Review of Information (JBI SUMARI). The full text of selected studies will be retrieved and assessed in detail against the inclusion criteria. Full text studies that do not meet the inclusion criteria will be excluded and reasons for exclusion will be provided in an appendix in the final systematic review report. Included studies will undergo a process of critical appraisal. The results of the search will be reported in full in the final report and presented in a PRISMA flow diagram.[25] Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer.

Assessment of methodological quality

Selected studies will be critically appraised by two independent reviewers at the study level for methodological quality in the review using standardized critical appraisal instruments from the Joanna Briggs Institute for the following study types: case control studies, case reports, case series, cohort studies, quasi-experimental studies, randomized controlled trials and analytical cross sectional studies.[26] Any disagreements that arise will be resolved through discussion, or with a third reviewer. Following critical appraisal, studies that do not meet a certain quality threshold will be excluded. The decision to exclude will be based on cut-off scores of less than 70% of the items assessed for all JBI critical appraisal tools included in this study. Which represents a cut-off score of less than 6 of 9 items of JBI critical appraisal checklist for quasi-experimental studies, less than 9 of 13 items of JBI critical appraisal checklist for randomized controlled trials, less than 8 of 11 items of JBI critical appraisal checklist for cohort studies, less than 7 of 10 items of JBI critical appraisal checklist for case control studies, less than 7 of 10 items of JBI critical appraisal checklist for case series, less than 5 of 8 items of JBI critical appraisal checklist for case reports and less than 5 of 8 items of JBI critical appraisal checklist for analytical cross sectional studies.

Data extraction

Data will be extracted from papers included in the review using the standardized data extraction tool available in JBI SUMARI by two independent reviewers.[26] The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives. Any disagreements that arise between the reviewers will be resolved through

discussion or with a third reviewer. Authors of papers will be contacted to request missing or additional data where required.

Data synthesis

Papers will, where possible be pooled in statistical meta-analysis using JBI SUMARI[26]. Effect sizes will be expressed as either odds ratios (for dichotomous data) and weighted (or standardized) mean differences (for continuous data) and their 95% confidence intervals will be calculated for analysis. Heterogeneity will be assessed statistically using the standard chi-squared and I squared tests. The choice of model (random or fixed effects) and method for meta-analysis will be based on the guidance by Tufanaru *et al*.[27]

Subgroup analyses will be conducted where there is sufficient data to investigate for effectiveness, age group (children, adolescents and adults) and types of intervention. Sensitivity analyses will be conducted to test decisions made regarding to the effectiveness of interventions. Where statistical pooling is not possible the findings will be presented in narrative form including tables and figures to aid in data presentation where appropriate.

A funnel plot will be generated to assess publication bias if there are 10 or more studies included in a meta-analysis. Statistical tests for funnel plot asymmetry (Egger test, Begg test, Harbord test) will be performed where appropriate.

Assessing certainty in the findings

A summary of findings' table will be created using GRADEPro GDT software. The Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach for grading the quality of evidence will be followed. The Summary of Findings table will present the following information where appropriate: absolute risks for treatment and control, estimates of relative risk, and a ranking of the quality of the evidence based on study limitations (risk of bias), indirectness, inconsistency, imprecision and publication bias.[28,29]

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Conflicts of interest

The authors have no conflicts of interest to disclose.

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Appendices

Appendix I

Medline search strategy (searched on March 6, 2018)

No.	Query	Results
1	("patient identification systems" OR "patient identification system" OR "patient tracking").ti,ab	318
2	(((patient* ADJ2 identif*7) OR bracelet* OR wristband*) ADJ2 (error* OR integrity OR mistake*)).ti,ab	188
3	(patient* ADJ3 misidentif*7).ti,ab	175
4	exp "PATIENT IDENTIFICATION SYSTEMS"/	2459
5	1 OR 2 OR 3 OR 4	2998

6	(((hospital OR hospitalisation OR hospitalization OR hospitals OR hospitalised OR hospitalized) AND (patient OR patients)) OR inpatient*).ti,ab	735283
7	exp INPATIENTS/ OR HOSPITALS/	88268
8	6 OR 7	797018
9	5 AND 8	566

280

281