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Identifying the data elements and functionalities of clinical decision-support systems to administer medications for neonates and pediatrics: A systematic literature review protocol

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ABSTRACT

Using health information systems capable of supporting decision-making can play a major role in improving nurses' performance and facilitating the medication process. Besides, identifying data elements and functionalities of the nursing decision support system can help health developers and policymakers in the design process. Thus, the present systematic review aims to identify the data elements and functionalities of the current systems to implement a clinical decision support system for pediatrics and neonates. This research can help to design an optimal decision support system for medication administration.

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22 **Identifying the data elements and functionalities of clinical decision-support systems to administer medications for neonates and pediatrics: A systematic literature review protocol**

22 Anticipated or actual start date

22 31/12/2021

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22 Clinical Decision Support System

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22 Nurses

22 This systematic review does not have Intervention(s) or exposure(s) group.

22 This systematic review does not have Comparator(s) or control group.

22 Identification of studies that developed, designed or evaluated a clinical decision-support system to administer medication for neonates and pediatrics.

22 The primary outcome of the present research is to identify the data elements to design a decision support system to manage medication administration in pediatrics and neonates.

22 1.Identifying the functionalities of a clinical decision support system for medication administration for pediatrics and neonates.
2. Identifying a platform for designing a clinical decision support system for medication administration for pediatrics and neonates.

22 selection
In this step of the study, after a search of the databases, the papers will enter into a reference management software and the duplicate papers will be excluded. The remaining papers will be imported to the Rayyan website for screening and their titles and abstracts will be checked by two subject experts based on the inclusion and exclusion criteria.
After screening the papers found in the previous step, the full text of the papers will be independently reviewed by two subject experts to select the relevant papers. Any disagreement will be solved in discussions between the two reviewers and if no consensus is made, a third expert reviewer will be consulted.
Coding
In this step, a customized data extraction sheet will be created for data collection via Microsoft Excel (2016) and will be completed by two reviewers independently. Details will be collected on the paper includes title, year of publication, type of study, setting, design platform, location of study, objectives and drug categories (e.g. antibiotics), data elements of the system, system's functionalities such as use of an alarm or reminder, information about the medicines taken in the system for the user (e.g. side effects of the medicine), and type of system evaluation. In this step, any case of disagreement will be solved in reviewers' discussion and a third expert person will be consulted if required.

22 All papers included in this systematic review will be assessed by two reviewers independently. The levels of evidence approach will be used to assess the quality of the papers. Any disagreement in this step of study will be settled in reference to a third expert reviewer from the research team.

22 The included studies will be categorized based on the different pediatric sub-settings (e.g. inpatients, NICU, PICU, emergency, …). Then, the relevant data elements and functionalities of the system will be extracted.

22 The different pediatric sub-settings (e.g. inpatients, NICU, PICU, emergency, …) will be reinvestigated to combine overlap data elements and functionalities.

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22 **Type and method of review**
Systematic Literature Review
Language
English
Country
Iran

22 Clinical Decision Support System
Medication administration
Pediatric and Neonate
Systematic Literature Review

22 Appendix 1. search syntax for this SLR in CINAHL(Cumulative Index to Nursing and Allied Health Literature) via EBSCOhost and PubMed:
The Search Strategy Used in CINAHL from 1995-2021:
(TX "Clinical Decision Support System*" OR TX "Clinical Decision Support*" OR TX "Clinical Decision Support tool*" OR TX "Handheld decision support" OR TX "Drug Information System*" OR TX ("Alert System*" AND Medication) OR TX "Medication Alert System*" OR TX (System AND "Medication Alert") OR TX ("Alert Systems" AND Medication) OR TX "Mobile Application*" OR TX "Mobile Apps" OR TX "Mobile App" OR TX "reminder system*") AND (TX "Drug Dosage Calculations" OR TX "Drug calculation" OR TX "Drug Administration Routes" OR TX "Drug administration" OR TX "Drug Route" OR TX "Drug delivery" OR TX "Drug handling"OR TX "Drug preparation" OR TX "Medication calculation"OR TX "Medication administration"OR TX "Medication handling"OR TX "Medication delivery" OR TX "Medication preparation" OR TX "Medicine preparation" OR TX "Medicine administration" OR TX "Medicine delivery" OR TX "Medicine handling" OR TX "Medication Route" OR TX "Dose calculation*" OR TX "Doses calculation*" OR TX "Medication dose")AND (PY 1995-2021)
The Search Strategy Used in PubMed from 01.01.1995 to 31.06.2021
("Clinical Decision Support System*"[tiab] OR "Clinical Decision Support*"[tiab] OR ("Decision Supports"[tiab] AND Clinical[tiab]) OR (Support[tiab] AND "Clinical Decision"[tiab]) OR (Supports[tiab] AND"Clinical Decision"[tiab]) OR ("Decision Support"[tiab] AND Clinical[tiab]) OR "Clinical Decision Support tool*"[tiab] OR "Handheld decision support"[tiab] OR "Drug Information System*"[tiab] OR ("Alert System*"[tiab] AND Medication[tiab]) OR "Medication Alert System*"[tiab] OR (System[tiab] AND "Medication Alert"[tiab]) OR ("Alert Systems"[tiab] AND Medication[tiab]) OR "Mobile Application*"[tiab] OR(Application[tiab] AND Mobile[tiab]) OR (Applications[tiab] AND Mobile[tiab]) OR "Mobile Apps" [tiab] OR (App[tiab] AND Mobile[tiab]) OR (Apps[tiab] AND Mobile[tiab]) OR "Mobile App"[tiab] OR "CDS System"[tiab] OR CDSS[tiab] OR "tablet application"[tiab]) OR "reminder system*"[tiab] OR (System[tiab] AND Reminder[tiab]) OR (Systems[tiab] AND Reminder[tiab]))AND("Drug Dosage Calculations"[all] OR "Drug calculation" [all] OR (Calculation [all] AND "Drug Dosage"[all]) OR (Calculations[all] AND "Drug Dosage"[all]) OR ("Dosage Calculation"[all] AND Drug [all]) OR ("Dosage Calculations"[all]AND Drug[all]) OR "Drug Administration Routes"[all] OR "Drug administration" [all] OR ("Administration Routes"[all] AND Drug[all]) OR ("Administration Route"[all] AND Drug[all]) OR "Drug Administration Route"[all] OR (Route [all]AND "Drug Administration"[all]) OR (Routes[all]AND "Drug Administration"[all]) OR "Drug Route"[all]OR "Drug delivery"[all] OR "Drug handling"[all]OR "Drug preparation"[all] OR (Preparation[all] AND Drug[all]) OR "Medication calculation"[all]OR "Medication administration"[all]OR "Medication handling"[all]OR "Medication delivery"[all]OR "Medication preparation"[all]OR "Medicine preparation"[all] OR "Medicine administration"[all]OR "Medicine delivery"[all] OR "Medicine handling"[all]OR "Medication Route"[all] OR "Dose calculation*"[all] OR "Doses calculation*"[all] OR "Medication dose"[all]) AND 1995/01/01:2021/06/31[dp]

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