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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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1 Works for me Share dx.doi.org/10.17504/protocols.io.bwbwpape

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DISCLAIMER

ABSTRACT

This study will be done as a Sistematic Literature Review on **the data elements and functionalities of clinical decision-support systems to administer medications for neonates and pediatrics.** In the present systematic review, three databases will be searched including PubMed/ MEDLINE, Embase via Embase.com,CINAHL (Cumulative Index to Nursing and Allied Health Literature)via EBSCOhost. also, The relevant theses will be also identified in ProQuest database.

DOI

dx.doi.org/10.17504/protocols.io.bwbwpape

PROTOCOL CITATION

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DISCLAIMER:

6 Review title and timescale

1.Review title

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

2. Orgignal langaage title

English

3. anticipated or actual start date

10/07/2021

4. Anticipated completion date

31/12/2021

5. Stage of review at the time of this submission

This systematic literature review(SLR) is in the stage(at time of submission) :

Review stage	Started	Completed
Preliminary searches	Yes	Yes
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

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12. Funding Sources/sponsors
None
13. conflicts of interest
There are not any actual or potential conflicts of interest.

14. Collaborators
None

6 Review methods

15. Review Question
This systematic literature review will identify the data elements and functionalities of clinical decision-support systems to administer medications for neonates and pediatrics.

16. Searches
Searching Academic Database:
PubMed/ MEDLINE, Embase via Embase.com, CINAHL (Cumulative Index to Nursing and Allied Health Literature) via EBSCOhost and ProQuest.
Search time interval: from the 1st of Jan 1995 up to 31th of June 2021.
Search terms:
“Clinical Decision Support Systems”, “Clinical Decision Support”, “Handheld decision support”, “Drug Information System”, “Medication Alert System”, ….
“Drug Dosage Calculations”, “Drug Administration Routes”, “Medication calculation”, “Drug delivery”, “Drug Route”, “Drug preparation”, “Dosecalculation*”, ….
The search syntax in CINAHL and PubMed are presented in appendix 1.
Our search will not be restricted based on language or geographic area.
17. URL to the search strategy

We will upload this protocol on Protocols.io.
I give permission for this file to be made publicly available. Yes

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18. Condition or domain being studied

Clinical Decision Support System

19. Participations/ population

Nurses

20.Intervention(s)/exposure(s)

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

21. comparator/ control

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

22. Type of study to be included

Included:

In the present systematic review, primary studies regarding the development of a medications administration software for pediatrics and neonates that presented the data items and functionalities of the system will be included regardless of the design platform. Those studies that addressed a system for administration of a drug category for pediatrics and neonates will be included too (e.g. antibiotics). Moreover, studies presenting the development of systems designed for medication administration for pediatric and neonate sub-settings including pediatric inpatients, NICU, PICU, pediatric emergency, and pediatric oncology will be included. Primary studies that design barcode medication administration systems will be included if they have used to help nurses' decision-making in the medication administration process. Overall, all papers meeting one of the above-mentioned conditions and designing a system for patients below age 18 (or a population defined as pediatric) will be included too. Moreover, the related theses or conference papers meeting the above-mentioned criteria will be included. If the relevant data is missing according to the primary objective, the paper will be retained only if at least one of the secondary objectives is met.

Excluded:

All papers or reports that addressed only pediatric nutrition informatics will be excluded. Letters to the editor, protocol studies, commentaries, and opinion articles will be excluded too.

23.Context

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

24.Primary Outcome(s)

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.

25. Secondary Outcome(s)

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.

26. Data extraction(selection and coding)

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 the 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.

27. Risk of Bias(quality) assessment

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 the study will be settled in reference to a third expert reviewer from the research team.

28.strategy of Synthesis

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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.

29.Analysis of subgroups or subsets

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

6 Review general information

30. Type and method or review

Systematic Literature Review

31. Langauge

English

32. Country

Iran

33. Reference and/or URL for published protocol

We will upload this protocol on Protocols.io.

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34.Dissemination plan

Give brief details of plans for communicating essential messages from the review to the appropriate audiences.

Do you intend to publish the review on completion?

Yes

35.Keywords

Clinical Decision Support System

Medication administration

Pediatric and Neonate

Systematic Literature Review

36.Current review status

On-going

37. any additional information

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

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(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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