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Exploring the facilitators and barriers of a wearable device to treat newborn jaundice at home: protocol for an integrative review.

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Review question

The aim of this integrative review is to synthesise the evidence base relating to home phototherapy and wearable technology for the treatment of newborn jaundice, and the experience of caring for a newborn infant receiving home phototherapy treatment. The following questions formed the basis of the review:

1. What is the use of home phototherapy and wearable technology for treatment of newborn jaundice?
2. What is the experience of parents and healthcare professionals in caring for a newborn infant receiving home phototherapy treatment for newborn jaundice?

Searches

We will search for published studies in the following databases: CINAHL, Medline, Scopus and Web of Science.

- Hand searching articles from reference lists in retrieved articles will be sourced to ensure completeness.

Limits to include:

- Studies published in English language only.
- Studies published in peer reviewed journals.
- Publications from 2000 to 2019.

Literature obtained from the search will be stored in RefWorks, and referenced according to Harvard Referencing style.

Types of study to be included

Inclusion criteria:

- Quantitative and qualitative methods irrespective of research design.
- Studies published in the English language.
- Studies published in peer reviewed journals from 2000 to 2019.

Exclusion criteria:

- Pilot studies, discussion papers, editorials, conference papers, opinion papers and thesis.

Condition or domain being studied

Jaundice is a common condition in newborn infants that if left untreated can leave them with long term brain dysfunction (Michaelides 2017). Approximately 60% of term and 80% of preterm newborn infants develop jaundice within the first week of life (NICE 2016).

Phototherapy is an artificial light source and the first line of treatment for newborn infants with jaundice (Battersby et al 2017). Developments in phototherapy point towards the possibility of providing home phototherapy services in the future (Snook 2017). The recent creation of a 'photonic textile' could potentially be used as a wearable device to deliver phototherapy treatment at home (Quandt et al 2017). However, for digital interventions to have actual impact, it is imperative to assess the value of the intervention for parents' everyday life and healthcare professionals everyday work (Shaw et al 2018). The proposed review will employ thematic analysis to examine the use and experiences of parents and

healthcare professionals in caring for a newborn infant receiving home phototherapy treatment for jaundice. Therefore, it has the potential to generate findings that are transferable to assess the facilitators and barriers of a concept wearable device to treat newborn jaundice at home.

Participants/ population

Inclusion population:

- Newborn infants with jaundice, Healthcare professionals (e.g Nurses, Midwives, Neonatologist) and parents with experience of caring for a newborn infant receiving home phototherapy treatment for jaundice.

Exclusion population:

- Newborn infant with jaundice receiving treatment other than home phototherapy, phototherapy treatment for anything other than newborn jaundice.

Comparator(s)/ control

None

Context

Studies will focus on home care settings, neonatal intensive care units and postnatal wards.

Main outcome(s)

To assess what is known about home phototherapy and wearable technology for the treatment of newborn jaundice, and to determine the thoughts and feelings of parents and healthcare professionals in caring for a newborn infant receiving home phototherapy treatment for jaundice.

Additional outcome(s)

None

Data extraction (selection and coding)

JL will take the lead responsibility for data extraction, searching the databases and screening all the titles and abstracts. AG and CK will screen a selection of the papers and work with JL to screen titles, abstracts and full texts to ensure the inclusion of all relevant studies. Full texts will be assessed against the inclusion criteria and if there are disputes, then discussion will take place to attempt and reach a consensus or another reviewer will be requested for resolution. The selection of full texts will follow PRISMA guidelines (Moher et al 2009) and the reviewers will work on extracting and coding of the selected full texts.

Risk of bias (quality) assessment

Qualitative and quantitative studies will be appraised using the appropriate Critical Appraisal Skills Programme checklist (CASP 2018).

Strategy for data synthesis

Qualitative and quantitative data will be synthesised following a four- step thematic synthesise process (Whittemore and Knafl 2005).

Analysis of subgroups or subsets

Not planned.

Contact details for further information

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Organisational affiliation of the review

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Review team members and their organisational affiliations

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Type and method of review

Service delivery and intervention, qualitative synthesis and integrative review.

Anticipated or actual start date

03 February 2019.

Anticipated completion date

February 2020.

Funding sources/ sponsors

This research is being undertaken as part of a Digital Health Institute (DHI) funded Master project. Robert Gordon University is sponsoring this research.

Conflicts of interest

None.

Language

English

Country

Scotland

Stage of review

Review ongoing

Dissemination plans

Discipline specific peer reviewed research journal.

Keywords

Integrative review; thematic analysis; newborn jaundice; phototherapy; parents; healthcare professionals; wearable.