INTRODUCTION

- Adherence to prescribed therapy is a primary determinant of treatment success.\(^1\)
- Non-adherence may worsen therapeutic and economic outcomes, due to an increased risk of adverse clinical outcomes, increased frequency of physician consultations, higher rates of hospitalisation, and increased healthcare costs.\(^1,2\)
- Among patients with cardiovascular diseases (CVDs), approximately one-third are estimated to be affected by non-adherence to their medications.\(^3\)
- Various approaches to improve CVD medication adherence (MA) and persistence have been studied,\(^4\) however there is a need for an up-to-date understanding of the evidence on health education programs, digital applications, and phone reminders for patients with hypertension or dyslipidemia.

OBJECTIVE

To identify and synthesise evidence on the impact of non-pharmacological interventions on MA and persistence among patients with hypertension or dyslipidemia.

METHODS

We conducted a systematic literature review (SLR) of randomised controlled trials (RCTs) investigating SAS adult patients with hypertension or dyslipidemia, published from July 2011 to July 2020. Eligible studies evaluated the effect of health education (HE), digital applications (DAPP), or phone reminders (PR) on MA or persistence.

Data extracted included details of study, intervention characteristics, MA and persistence outcomes. We categorized intervention approaches according to definitions shown in Table 1, (risk of bias guidelines for reviews of complex interventions).\(^5\)

We synthesized data narratively using effect direction plots.\(^6\) Quality assessment was performed for each study using the Cochrane Risk of Bias 2 tool.\(^7\)

Table 1. Definitions of intervention categories applied in this review

<table>
<thead>
<tr>
<th>Intervention Category</th>
<th>Study Design</th>
<th>Adherence</th>
<th>Persistence</th>
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<tbody>
<tr>
<td>Health Education (HE)</td>
<td>RCT</td>
<td>▲</td>
<td>▲</td>
</tr>
<tr>
<td>Digital Application (DAPP)</td>
<td>RCT</td>
<td>▲</td>
<td>▲</td>
</tr>
<tr>
<td>Phone Reminder (PR)</td>
<td>CRCT</td>
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RESULTS

- Of 3,866 citations retrieved, a total of 64 studies were included in this SLR (52 RCTs and 12 cluster RCTs) (Figure 1).

![Figure 1. PRISMA Flowchart](image)

- Studies identified via database and registers
  - Records identified from MEDLINE
  - Records identified from EMBASE
  - Records identified from CINAHL
  - Records identified from DARE
  - Records identified from Cochrane Register of Controlled Trials
  - Records identified from ClinicalTrials.gov
  - Records identified from AMED
  - Records identified from ProQuest Dissertations and Theses

- Records excluded from title/abstract screening
  - Duplicates
  - Non-English
  - Not human
  - Interventions or studies outside scope
  - Reviews or meta-analyses
  - Interventions not included
  - Interventions not relevant
  - Interventions not within scope

- Records identified from contact with authors

- Records identified from reference lists

- Total studies included for review (n=64)

- Included studies (n=64)

- Studies included in qualitative analysis (n=62)

- Studies included in meta-analysis (n=41)

- Studies identified via other methods

- Records identified from grey literature

- Reports identified from Google Scholar

- Reports identified from Who is Citing

- Reports identified from ClinicalTrials.gov

- Reports identified from ResearchGate

- Reports identified from ResearcherID

- Reports identified from ORCID

- Reports identified from PubMed

- Reports identified from Google

- Reports identified from Twitter

- Reports identified from LinkedIn

- Reports identified from Facebook

- Reports identified from Youtube

- Reports identified from Instagram

- Reports identified from Twitter

- Reports identified from Instagram

- Reports identified from Facebook

- Reports identified from Youtube

Studies assessing HE in single-modal interventions largely found improvements in MA [85%] (Figure 2). All HE interventions that consisted of a single approach showed improvements in MA. Studies of interventions that consisted of ≥1 HE approach mostly found improvements in MA [72%] in the intervention arm.

HE was included as part of a multi-modal intervention in 27 studies, of which 20 [74%] reported improvements in MA (Figure 2).

Most studies [81%] assessing interventions that included PR reported improvements in MA (Figure 2).

Studies evaluating interventions that included DAPPs found improved adherence in 8 of 10 studies [80%] (Figure 2).

![Figure 2. Effect direction plot summarizing adherence and persistence outcomes in all studies](image)

- Statistical significance of change in MA in the intervention group vs the comparator group at the end of follow-up was assessed by 56 studies. Of these, 50% reported significant improvements favouring the intervention vs comparator, four had conflicting outcomes, and 24 reported non-significant differences. Across all studies assessing statistical significance, no negative trend was reported between the comparator arms.

- Two studies investigated persistence, both finding significant improvements using HE interventions.

CONCLUSIONS

- Most of the studies suggest that “beyond the pill” approaches using HE, PR, or DAPPs have a positive effect on patient adherence.
- Heterogeneity in the design, conduct and reporting of the studies included in this review varied considerably, limiting the synthesis across studies.
- The evidence base was most established for interventions that included HE. Most of the studies with significant MA improvements included an HE component as part of the intervention.
- Numerically positive evidence was reported for patients using an intervention where a phone reminder was involved. However, PR was always assessed in conjunction with other approaches and the contribution of the comparison unclear.
- The benefit of digital applications on adherence remains to be clarified as all the studies using this approach included an HE or PR component, making the interpretation of the results complex.

REFERENCES


DISCLOSURES

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Impact of non-pharmacological interventions on medication adherence in hypertension or dyslipidemia: a systematic literature review.

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