

Title:

A Review of Pillbox Design Features Used in Medication Adherence Interventions

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1. Goldstein CM, Gathright EC, Dolansky MA, et al. Randomized controlled feasibility trial of two telemedicine medication reminder systems for older adults with heart failure. *Journal of Telemedicine & Telecare*. 2014;20(6):293-299. 10. Porter AK, Taylor SR, Yabut AH, Al-Achi A. Impact of a pill box clinic to improve systolic blood pressure in veterans with uncontrolled hypertension taking 3 or more antihypertensive medications. *Journal Of Managed Care & Specialty Pharmacy*. 2014;20(9):905-911.

Abstract Summary:

This abstract is a review of pillbox designs and how they have been used in medication adherence studies. After reading, one should be able to identify the various pillboxes available and the need for further research in order to identify pillboxes that are most effective in promoting medication adherence.

Learning Activity:

LEARNING OBJECTIVES	EXPANDED CONTENT OUTLINE
The learner will be able to identify the variety of pillboxes that have been reported in past pillbox studies.	Through the descriptions provided learners will see the variety in pillbox boxes available as well as the various methods in which they have been used by researchers during previously conducted studies.
The learner will be able to identify the need for further research with regards to how pillboxes can be used effectively to treat target populations.	By reading how pillboxes have been used in past studies I hope to lead learners to question how they can be studied more effectively in order to identify the ideal pillbox for a target population as well as a more precise method in which pillboxes can be used to support medication adherence.

Abstract Text:**Background**

Pillboxes are regularly used in practice and have evidence they are effective in supporting medication adherence. However, many different pillbox designs exist on the market. It is unclear which different or similar designs have been used in medication adherence intervention studies and how they function to support medication adherence.

Purpose

This review was conducted to describe how pillboxes were used in medication adherence interventions, identify specific pillbox design features used in intervention studies, and describe mechanisms of action related to pillbox use.

Methods

Five multi-disciplinary databases were searched for clinical trials that used pillboxes in medication adherence interventions as part of a large review to evaluate intervention fidelity. These articles were then analyzed and the following information was abstracted for this secondary review: descriptions of study design, components of the intervention, physical descriptions of the pillbox, pictures, references to manufacturer name, and descriptions of targeted behaviors suggesting potential mechanisms of action.

Results

A total of 38 articles reporting 40 studies were included. Most studies reported that the pillbox was used as part of a multicomponent intervention, with only 11 studies designed to test the pillbox as a single component intervention¹⁻¹¹. There was a lack of reported information as to whether participants were given instruction on how to use the pillbox and whether these instructions were written or verbal. The most common pillbox used (n=15) held a 7-day supply of medication, but these boxes also varied in their design features. Eight articles reported boxes that allowed multiple dosing intervals and two articles reported a 28-compartment box⁶. A majority of articles provided a physical description of the pillbox used and a few (n=5) also provided a picture. Although a large amount of information could be gathered from these descriptions, there was a lack of cohesiveness in regards to the descriptive details provided. Some articles simply used the brand name of the pillbox while others included specific details about the shape, color, labeling, and portability. Details provided as to how the pillboxes were expected to function in medication adherence were few, but two main uses were identified based on author's descriptions: a memory aid and an organization aid. Further, description as to how exactly the pillboxes were to support memory and adherence was not consistently provided.

Conclusions

A wide variety of pillboxes have been used in intervention studies. Descriptions of these pillboxes varied in detail as well, making across study comparison difficult. Given the wide variation in details about specific design features reported in the literature, it is difficult to determine if one particular design feature is better than another and in what population certain design features are most effective. There is a need for further study of how pillboxes support medication adherence and in which patient population's pillboxes are more effective.