INPLASY PROTOCOL

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Conflicts of interest:
None.

Comparative effectiveness of enhanced patient instructions for bowel preparation before colonoscopy: a systematic review and network meta-analysis

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Review question / Objective: **The main aim of the current systematic review is to determine which type of enhanced patient's instruction is the most effective for bowel preparation before colonoscopy.**
Information sources: **We will perform electronic search in PubMed, Embase, and CENTRAL for capturing all eligible records from their inception to December 2019. We will construct search strategy under the assistance of an experienced medical librarian using full text words and Medical Heading Subject (MeSH). We will also refine search strategy according to the specific requirements of each database.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 21 December 2020 and was last updated on 21 December 2020 (registration number INPLASY2020120103).

INTRODUCTION

Review question / Objective: **The main aim of the current systematic review is to determine which type of enhanced patient's instruction is the most effective for bowel preparation before colonoscopy.**

Condition being studied: **Evidence suggested that inadequate bowel preparation was associated with higher risk of adverse events during colonoscopy. Therefore, adequate bowel preparation is the prerequisite of increasing the effects of colonoscopy and decreasing the risk of adverse events during colonoscopy. A series of efforts have been exerted to**

achieve this purpose of improving the quality of bowel preparation. Previous studies have determined several factors which can influence the quality of BP, such as appropriate dietary restriction and proper administration of preparation solutions(Song et al., 2016). Of all factors, adequate comprehension of details of BP and colonoscopy is a critical contributor to adequate BP(Kurlander et al., 2016). Patients usually receive written booklet and/or verbal instructions from professionals before colonoscopy for details of BP and dietary restriction, which are defined as standard patient instruction (SPI)(Guo et al., 2017). However, the effect of SPI in improving the quality of BP is not enough(Ness, Manam, Hoen, & Chalasani, 2001). So, researchers and practitioners have been developing a majority of enhanced patient instructions (EPIs) including cartoon pictures, short message service (SMS), phone call, mobile app and social media application to improve the quality of BP prior to colonoscopy(Guo et al., 2017). So far, several traditional pairwise meta-analyses.

METHODS

Participant or population: Adult patients who were assigned to receive selective outpatient colonoscopy.

Intervention: All enhanced or standard patient instructions for BP.

Comparator: All enhanced or standard patient instructions for BP.

Study designs to be included: Only randomized controlled trials will be considered.

Eligibility criteria: The inclusion criteria are as follows: (a) patients: adult patients who were assigned to receive selective outpatient colonoscopy, (b) interventions: all enhanced or standard patient instructions for BP, (c) outcome: the quality of BP which was assessed with the adequate preparation rate (APR), adherence to instruction (AI), satisfaction with the BP solution (SWBP), willingness to repeat the same BP solution (WRBP), PDR, and AEs including abdominal discomfort (AD), nausea and vomiting (NV), and sleep disturbance (STD), and (d) study design: RCTs. Restriction of language will not be imposed.

Information sources: We will perform electronic search in PubMed, Embase, and CENTRAL for capturing all eligible records from their inception to December 2019. We will construct search strategy under the assistance of an experienced medical librarian using full text words and Medical Heading Subject (MeSH). We will also refine search strategy according to the specific requirements of each database.

Main outcome(s): The quality of BP which was assessed with the adequate preparation rate (APR), adherence to instruction (AI), satisfaction with the BP solution (SWBP), willingness to repeat the same BP solution (WRBP), PDR, and AEs including abdominal discomfort (AD), nausea and vomiting (NV), and sleep disturbance (STD).

Quality assessment / Risk of bias analysis: We will assign two investigators to independently assess the risk of bias each eligible study with the Cochrane Risk of Bias assessment tool(J. P. Higgins et al., 2011). We will rate an individual study as low, unclear, or high risk of bias according to match level between actual information and the following assessment criteria: random sequence generation; allocation concealment; blinding of participants and personnel; blinding of outcome assessment; incomplete outcome data; selective reporting; and other bias. A third investigator will be consulted to solve any discrepancies.

Strategy of data synthesis: In traditional pairwise meta-analysis, we will calculate the pooled odds ratio (OR) with 95% confidence interval (CI) to express the dichtoumous data(DerSimonian & Laird, 1986). We will use the Cochrane Q to qualitatively to assess the heterogeneity and also used I2 statistic to quantitatively estimate the level of heterogeneity(J. P.

Higgins, Thompson, Deeks, & Altman, 2003). All pairwise meta-analyses will be performed based on random-effect model because this model simultaneously incorporate within- and between-study heterogeneity. Publication bias will be assessed with funnel plot if accumulated number of eligible studies for individual outcome was more than 10(J. P. T. Higgins, Altman, & Sterne), and an asymmetry suggested presence of publication bias(Page, McKenzie, & Higgins, 2018). Direct meta-analysis will be conducted with the Review Manager 5.3 (Cochrane Collaboration, Copenhagen, Denmark). After completed direct meta-analysis, we will then conduct random effects network meta-analyses to calculate all estimates of relative effects using Markov chain Monte Carlo methods in OpenBUGS 3.2.3 (MRC Biostatistics Unit, Cambridge, UK) following methods described by Lu and Ades(Dias, Sutton, Ades, & Welton, 2013; Lu & Ades, 2004). We will use the initial value which was automatically generated from software to fit the model(Sutton, Ades, Cooper, & Abrams, 2008). To gain convergence, we will perform each Markov chain Monte Carlo chain with 50000 iterations and 20000 burn-in. We will assess the probability that each instruction is the most efficacious in improving quality of BP, the second best, the third best, and so on, by calculating the OR for each instruction compared with an arbitrary common control group, and counting the proportion of iterations of the Markov chain in which each introduction had the highest OR, the second highest, and so on(Singh et al., 2015).

Subgroup analysis: Not applicable.

Sensibility analysis: We will design several sensitivity analyses to test the robustness of summarized findings according to the following principles: (a) BP assessment scale (excluding studies in which uncommon scales were used except for BBPS, OBPS and ABPS); (b) risk of bias (excluding studies with high risk); and (c) study design (excluding studies with multicenter design).

Language: English.

Country(ies) involved: China.

Keywords: colonoscopy, bowel preparation, patient instruction; systematic review, network meta-analysis.

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