

A Clinical Pharmacological Comparative Quantification Analytical Research Study Among Systematic Reviews and Meta-Analyses on Bronchodilators and Anti-Diabetic Drugs

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Conflict of interest: Nil

Abstract

Background: There are numerous systematic reviews and meta-analyses conducted on the β adrenergic agonistic bronchodilators, like salbutamol, formoterol, salmeterol and other β adrenergic agonists, as well as, on the anti-diabetic drugs, like biguanides, dipeptidyl peptidase-4 inhibitors and sodium glucose co-transporter-2 inhibitors. Systematic Review and Meta-Analysis, are the two very novel methods of Clinical Research Methods in Clinical Research, Pharmacology, Clinical Pharmacology, and Evidence-Based Medicine, integrated within Medical Sciences, that define the intricacies of the clinical analytical research study, with a uniquely balanced representation of qualitative and quantitative research, review and analysis.

Aim and Objectives: The objective of this clinical pharmacological study was a comparative quantification analytical research among systematic reviews and meta-analyses on bronchodilators and anti-diabetic drugs.

Materials and Methods: This study involved the comparative and quantitative analysis on these clinical research methods conducted on the bronchodilators and the anti-diabetic drugs. In this study, the comparative quantification of the different experimentations was conducted as systematic review and meta-analysis on bronchodilators and anti-diabetic drugs. After that, the comparative percentages of systematic reviews conducted on anti-diabetic drugs as well as on bronchodilators was derived; and the comparative percentages of meta-analyses conducted on anti-diabetic drugs and on bronchodilators was also derived statistically.

Results: The comparative percentages of systematic reviews conducted on anti-diabetic drugs was 66% and on bronchodilators was 34%; whereas the comparative percentages of meta-analyses conducted on anti-diabetic drugs was 53% and on bronchodilators was 47%.

Conclusion: Therefore, this was concluded that both systematic reviews as well as meta-analyses were more widely conducted on anti-diabetic drugs than on bronchodilators.

Keywords: Clinical Pharmacological Analytical Clinical Research, Systematic Review, Meta-Analysis, Bronchodilators, Anti-Diabetic Drugs, Comparative Quantification

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Introduction

Clinical Research is intended to produce knowledge valuable for understanding

human disease, preventing and treating illness, and promoting health. Clinical

Research is a significant component of the existing medical patient healthcare and its further improvisation, contained within Pharmacology, Clinical Pharmacology, and Evidence-Based Medicine, as an integrated part of the Medical Sciences. Systematic Review and Meta-Analysis, the novel twins, are the two unique pillars of Clinical Research Methods in Medical Sciences including Pharmacology, Clinical Pharmacology, and Evidence-Based Medicine, that define the intricacies of the clinical study, with a maximal representation of qualitative research, review and analysis, and a minimal supplementation of quantitative analysis, in systematic review; while in meta-analysis, there remains a maximal representation of quantitative research, review and analytical interpretations.[1-4]

There are numerous systematic reviews and meta-analyses conducted on the β adrenergic agonistic bronchodilators, like salbutamol, formoterol, salmeterol and other β adrenergic agonists, as well as, on the anti-diabetic drugs, like biguanides, eg. metformin, dipeptidyl peptidase-4 inhibitors, eg. sitagliptin, and sodium glucose co-transporter-2 inhibitors, eg. remogliflozin.[1, 2, 5-21]

Objectives

The objective of this clinical pharmacological study was a comparative quantification analytical research among systematic reviews and meta-analyses on bronchodilators and anti-diabetic drugs.

Materials and Methods

Ethical Approval:

This study did not involve any human or animal subjects; therefore, it did not require any ethical approval, and could be exempted from ethics review. Yet, the ethical approval was obtained, to initiate the study with a confirmed ethical review.

At first, the Institutional Ethics Committee clearance and approval was taken. The study was conducted in accordance with the

ethical principles of Declaration of Helsinki and Good Clinical Practices contained within the International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use (ICH-E6 and ICH-E17), and in compliance with the global regulatory requirements. Informed consent was taken from each patient.

Study Type:

It was a multi-centre, clinical pharmacological, prospective, comparative, quantitative, analytical, open-labelled study.

Study Participants:

The study participants consisted of global mild to early moderate bronchial asthmatic patients and global mild to early moderate type II diabetic patients. The pharmacological clinical research database was the global heterogenous research analyses and similar study literature on the bronchodilators and the anti-diabetic drugs.

Selection Criteria of Study Participants:

The **Inclusion Criteria** were as follows:

- (i) patients of any gender,
- (ii) patients within 21 and 43 years,
- (iii) patients suffering from mild to moderate bronchial asthmatic patients and mild to early moderate type II diabetic patients,
- (iv) co-operative and conscious patients,
- (v) patients willing to undergo all pre- and post- treatment investigations and willing to complete the entire course of treatment,
- (vi) patients who have given consent and are willing to go for a follow-up,
- (vii) patients not taking any previously started or any concomitant medication.

The **Exclusion Criteria** were as follows:

- (i) uncooperative or unconscious patients,
- (ii) patients below 21 and above 43 years,
- (iii) patients presenting with any disease other than mild to moderate bronchial asthma and mild to early moderate type II diabetic patients,
- (iv) patients with a history of hypersensitivity to any of the study drugs,
- (v) patients with high-risk diseases, cardiac, renal or any other associated complications or co-morbidities,
- (vi) any chronic disease intervening with the study data,
- (vii) immunocompromised patients,
- (viii) patients suffering from gastrointestinal diseases like peptic ulcer, regional enteritis and ulcerative colitis,
- (ix) pregnant or lactating women (women of childbearing potential are required to have a negative urine pregnancy test result and to agree to use an effective form of contraception for the duration of study),
- (x) children or very old patients,
- (xi) other associated medical illness or disorders having impact on study results.

Study Period:

The study period, comprising of the periods for the research study and the compilation of the study literature, was 1 year, September 2013 to December 2013, and from June 2021 to April, 2022.

Study Place:

This research study and the compilation of the study literature was done in the Departments of Pharmacology, Clinical Pharmacology, Evidence-Based Medicine, Respiratory Medicine, Medical and Reproductive Endocrinology, Molecular Medicine, Clinical Medicine, and Clinical Research, in Dr. Moumita Hazra's

Polyclinic And Diagnostic Centre, Hazra Nursing Home, Hazra Polyclinic And Diagnostic Centre, Dr. Moumita Hazra's Academic Centre, Dr. Moumita Hazra's Educational Centre, Mamata Medical College, Mamata Hospitals, Rama Medical College Hospital and Research Centre, Rama University, J. J. M. Medical College and Hospital, Chigateri General Hospital, and Mahuya Diagnostic Centre and Doctors' Chamber.

Study Procedure:

An analysis of the retrieved literature derived from a thorough literature review from various available literature databases was performed, to record, review, thoroughly analyse from a wide-ranged study literature of pharmacological researches, reviews, case presentations and varied databases about bronchodilators, in the treatment of mild to early moderate asthmatic patients, and anti-diabetic drugs, in the treatment of mild to early moderate type II diabetic patients. After that, an evidence-based medical research study was conducted, on the comparative quantification of systematic reviews and meta-analyses conducted on bronchodilators and anti-diabetic drugs, with subsequent statistical analysis of the global pharmacotherapeutic experimentations and pharmacological study literature on bronchodilators in the treatment of mild to early moderate asthmatic patients, and anti-diabetic drugs in the treatment of mild to early moderate type II diabetic patients. This study was conducted, by recording, calculating and statistically deriving the percentage of analyses retrieved from the study literature database, on bronchodilators and anti-diabetic drugs, in the form of graphical representation of the deduced study results.

Statistical Analysis:

The statistical analyses were done with percentages, with subsequent graphical representations.

Results

The comparative quantification analyses of the different experimentations conducted as systematic review and meta-analysis on bronchodilators and anti-diabetic drugs, delineated the following study results. Figure 1 depicted that the comparative percentages of systematic reviews conducted on anti-diabetic drugs was 66% and on bronchodilators was 34%. This shows that systematic reviews were more widely conducted on anti-diabetic drugs than on bronchodilators. Figure 2 depicted

that the comparative percentages of meta-analyses conducted on anti-diabetic drugs was 53% and on bronchodilators was 47%. This shows that meta-analyses were also conducted slightly more on anti-diabetic drugs than on bronchodilators. Therefore, this comparative quantification analysis shows that both systematic reviews as well as meta-analyses were more widely conducted on anti-diabetic drugs than on bronchodilators.

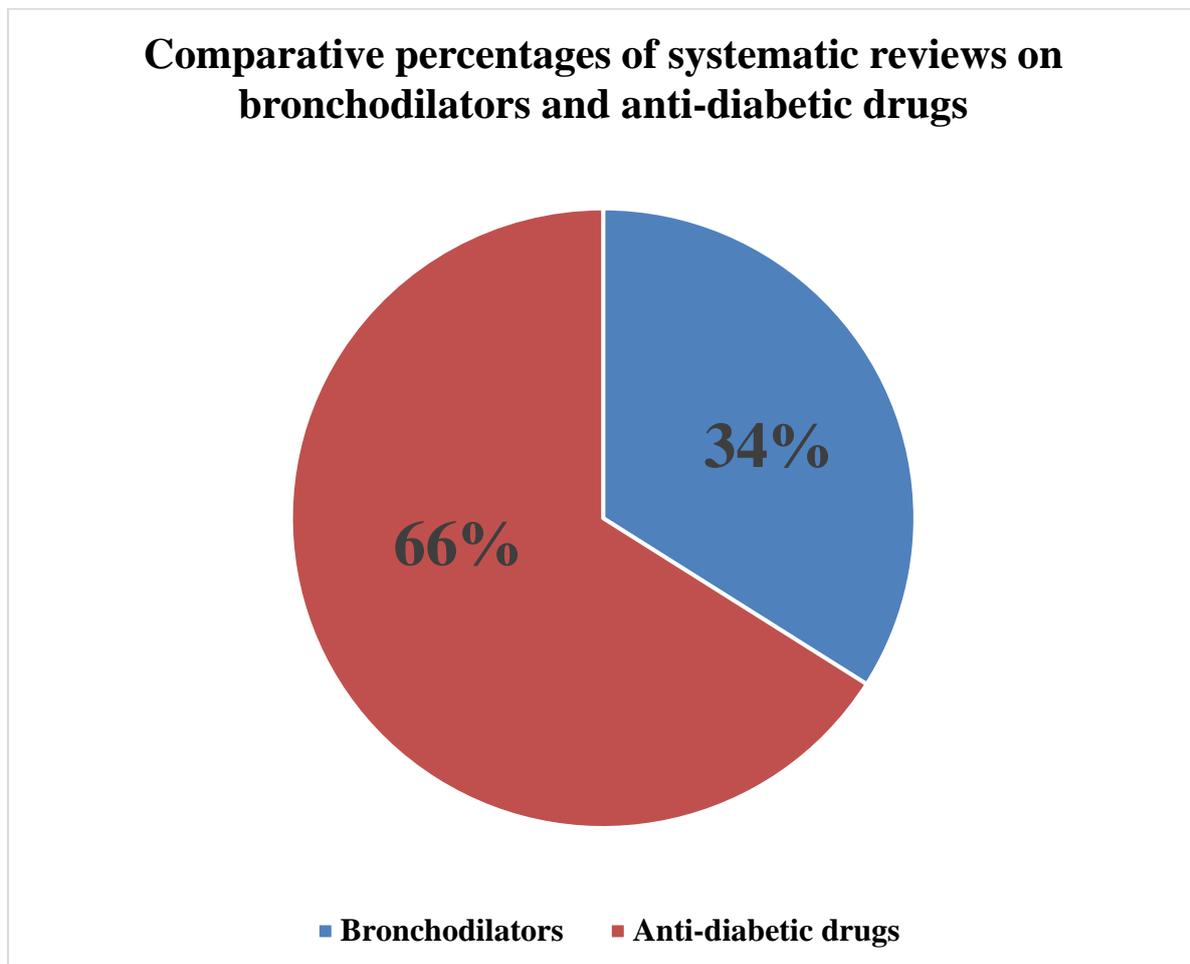


Figure 1: Comparative quantification of systematic reviews on bronchodilators and anti-diabetic drugs

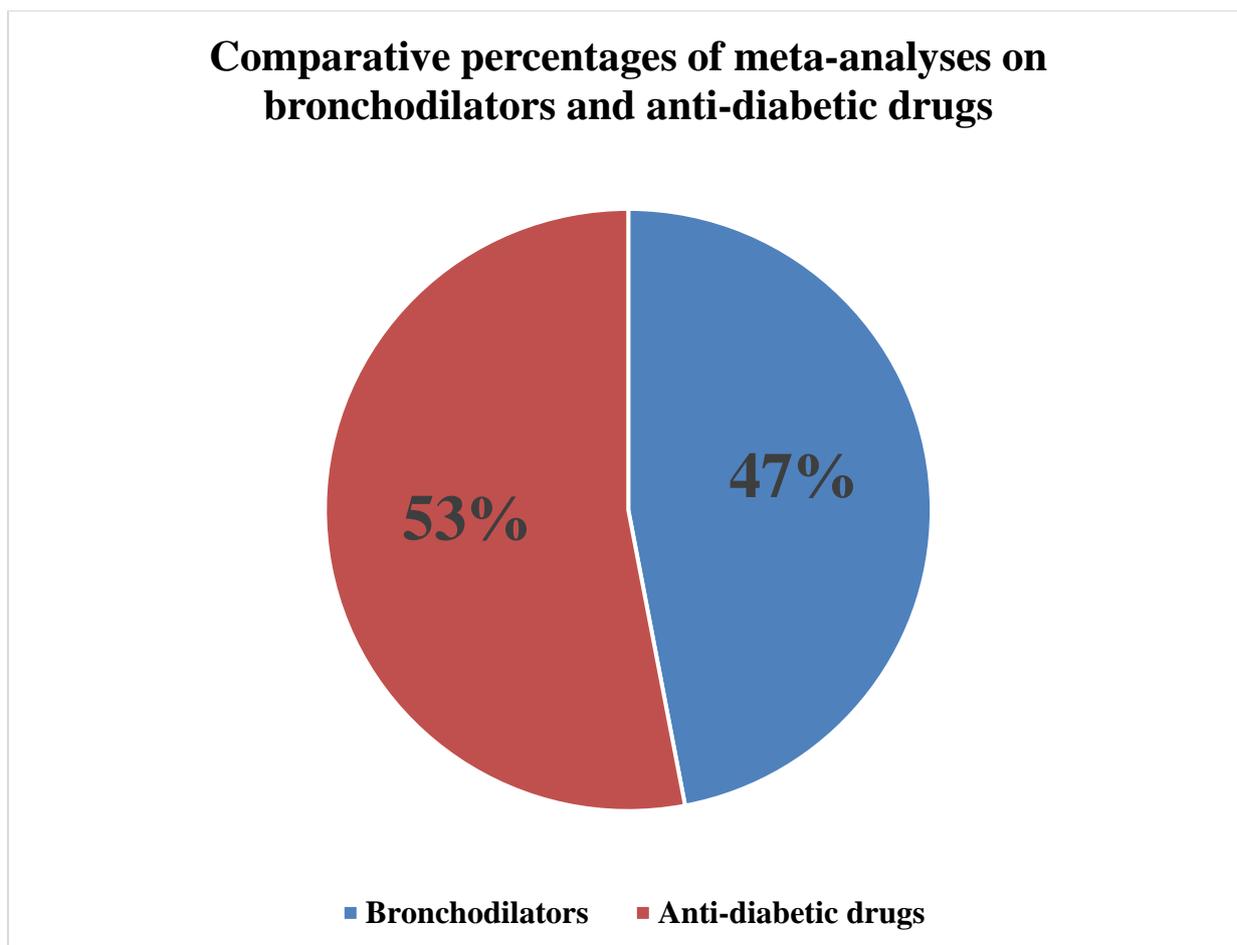


Figure 2: Comparative quantification of meta-analyses on bronchodilators and anti-diabetic drugs

Discussion:

In this study, the comparative quantification of the different experimentations conducted as systematic review and meta-analysis on bronchodilators and anti-diabetic drugs, delineated that the comparative percentages of systematic reviews conducted on anti-diabetic drugs was 66% and on bronchodilators was 34%; whereas the comparative percentages of meta-analyses conducted on anti-diabetic drugs was 53% and on bronchodilators was 47%.

In a comparative quantification study between systematic reviews and meta-analyses on bronchodilators, it was deduced that the percentage of systematic reviews conducted on bronchodilators was 32%, whereas the percentage of meta-analyses

conducted on bronchodilators was 68%, thus showing meta-analyses to be more widely conducted on bronchodilators, than the systematic reviews.

In another comparative quantification study between systematic reviews and meta-analyses on anti-diabetic drugs, it was deduced that the percentage of systematic reviews conducted on anti-diabetic drugs was 39%, whereas the percentage of meta-analyses conducted on anti-diabetic drugs was 61%, thus showing meta-analyses to be more widely conducted on anti-diabetic drugs, than the systematic reviews.

In yet another comparative quantification study between systematic reviews and meta-analyses on bronchodilators and anti-diabetic drugs, it was deduced that the percentage of systematic reviews

conducted on bronchodilators and anti-diabetic drugs was 33%, whereas the percentage of meta-analyses conducted on bronchodilators and anti-diabetic drugs was 67%, thus showing meta-analyses to be more widely conducted on bronchodilators and anti-diabetic drugs, than the systematic reviews.[1, 2, 5-21]

Thus, this study demonstrated that the systematic reviews were more widely conducted on anti-diabetic drugs than on bronchodilators, and meta-analyses were also conducted slightly more on anti-diabetic drugs than on bronchodilators. Therefore, this comparative quantification analysis shows that both systematic reviews as well as meta-analyses were more widely conducted on anti-diabetic drugs than on bronchodilators.

Therefore, this quantitative analysis certainly presented an appraisal of the extent of conducted systematic reviews and meta-analyses on the bronchodilators and anti-diabetic drugs, thus focusing on further research preferences, for better improvisations in anti-asthmatic and anti-diabetic pharmacotherapeutics.

Conclusion

Therefore, this was concluded that both systematic reviews as well as meta-analyses were more widely conducted on anti-diabetic drugs than on bronchodilators.

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Declarations:

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