

Systematic Review on the Potential of Pharmaceutical Intervention in Relation to Financial Resources Saving for Health System

Kleemann D, De Freitas GRM* and Heineck I

Universidade Federal do Rio Grande do Sul, Brazil

***Corresponding author:** Gabriel Rodrigues Martins de Freitas, Faculty of Pharmacy, Graduated Program of Pharmaceutical Sciences, UFRGS, Porto Alegre, RS, Brazil, E-mail: grmf.pharma@gmail.com

Short Communication

Volume 1 Issue 8

Received Date: November 22, 2017

Published Date: December 01, 2017

Keywords: Pharmaceutical intervention; Drug-related problems

Abbreviations: DRP: Drug-Related Problems

Introduction

Drug-Related Problems (DRP) generate extra spending on public health resources [1,2]. Pharmacoeconomic analysis allow the elaboration of preventive actions that avoid DRP and reduce costs in order to produce a positive impact on people's quality of life, health system security and resource allocation efficiency [3-5]. Therefore, systematic review of studies evaluating the potential of pharmaceutical interventions on resources saving was carried out.

Material and Methods

The search was done in the Medline databases via PubMed, LILACS, ProQuest Dissertations and Theses, Scielo and Scopus and the search strategy in the databases can be checked in Table 1. To be elected the articles should involve:

- The intervention of the pharmacist on the identification, prevention or resolution of drug-related morbidities; and
- Involve the avoidable cost of pharmacist intervention. The data extraction was done through a form created and validated and was performed independently by two reviewers. The discrepancies found were analyzed

by a third reviewer. From the search strategy described above in each of the bases, 10,540 articles were retrieved. After removing the repeated articles and applying the eligibility criteria in the title review and abstracts, 99 articles were included on the economic impact of pharmaceutical interventions. However, due to the time to perform this work, only 55 (55.6%) articles were accessed, since 44 (44.4%) were paid or were not found.

#	Terms
1	Drug-related morbidity
2	Adverse drug reaction
3	Drug-related problem
4	Adverse drug event
5	Drug toxicity
6	Cost
7	Economic evaluation
Search strategy Medline, ProQuest and Scopus	{[(1+6)+(1+7)]+[(2+6)+(2+7)]+[(3+6)+(3+7)]+[(4+6)+(4+7)]+[(5+6)+(5+7)]}
Search strategy LILACS and Scielo	1+2+3+4

Table 1: Exemplification of the search strategy in the databases for the systematic review.

Results and Discussion

Fifty-five studies were analyzed, totaling a population around of 537 thousand patients with a mean age of 64 years. The perspective of calculating the costs of the

studies was mostly of hospitals and government (Table 2). The main interventions performed by the pharmacists were dose adjustment, provision of drug information, discontinuation and initiation of new therapy and identification and management of DRP, and the acceptance level of the interventions was on average 77% (Table 3).

Perspective	Number of studies (%)
Hospital	23 (41,8)
Government	14 (25,4)
Institution	12 (21,8)
Hospital and patient	2 (3,6)
Government and patient	2 (3,6)
Health insurance	1 (1,8)
Insurance	1 (1,8)

Table 2: Quantification of the expenditure perspective of the analyzed studies.

Interventions	Number of studies (%)
Dose adjustment	33(15,1)
Drug information	24(43,6)
Identification and management	20 (9,1)
Review of prescription	18 (8,2)
Drug discontinuation	16 (7,3)
Initiation of new therapy	15 (6,8)
Change in administration route	13 (5,9)
Dose adjustment gap	10 (4,5)
Therapeutic monitoring	8(3,6)
Pharmacokinetics monitoring	7(3,2)
Modify drug	7(3,2)
Counseling	5(2,2)
Time treatment adjustment	4(1,8)
Duplicate Therapy Management	4(1,8)
Increase adherence to treatment	4(1,8)
Handling of omission and non-prescribed medication	4(1,8)
Reconciliation	4(1,8)
Change in pharmaceutical form	1(1,3)
Clarify Prescription	1(1,3)
Others	17(7,7)

Table 3: Classification and frequency of types of pharmaceutical intervention performed in the studies evaluated.

Of the analyzed studies, 89% reported that the interventions of pharmacists economized significantly on resources, 20% saved between one hundred thousand and one million dollars and 18.2% more than one million

dollars (Table 4). Moreover, every dollar spent with a pharmacist, around \$24 is saved with the interventions of this professional.

The vast majority of the studies were observational, and 43 (78.2%) were cross-sectional studies, of which 28 had a control group, which was usually analyzed before the intervention. Seven (12.7%) were cohort studies. The remainder had an experimental design, and three (5.5%) were randomized controlled clinical trials and two (3.6%) non-randomized clinical trials. Of the 55 articles analyzed, 27 (49.1%) used primary data and 28 (50.9%) used secondary data.

Twenty-seven (49.0%) studies showed the rate of acceptance of pharmaceutical interventions by the health team, which averaged 77% of acceptance.

Currency	Savings per year	Number of studies
Dollar	Menor que US\$ 1.000	4
	Entre US\$ 1.000 – 100.000	16
	Entre US\$ 100.000 – 1.000.000	11
	Maior que US\$ 1.000.000	10
Euro	Entre € 1.000 – 100.000	5
	Entre € 100.000 – 1.000.000	1
Libras (UK)	Entre £ 1.000 – 100.000	1
Dollar (Singapore)	Entre S\$ 100.000 – 1.000.000	1

Table 4: Economies of resources in a period of one year in the articles analyzed, separated by currencies.

It is evident the need to unify and clarify the terms used to describe the problems that occur due to the use of drugs, so that a better comparison can be made between different studies. Furthermore, it is noticed that the most recurrent problem related to the drug is associated with the dose, which needs adjustment in quantity and frequency, requiring the presence of the pharmacist to do this intervention. Taking into account the results found in this systematic review, it is concluded that the presence of the pharmacist performing clinical interventions reduces costs in a very significant way for the health system.

It is also important to note that of the 55 studies, 38.2% of specified the number of pharmacists who were involved in the process. Of the 61.8% that they specified, 41.2% were interventions made only with one pharmaceutical professional. This shows that the presence of only one professional providing this

pharmaceutical service can already save a lot of financial resources within the health system, but this professional can become overwhelmed if he performs logistical and clinical activities within the institutions. It can be presumed that the presence of a larger number of pharmacists would lead to even more significant resource savings.

Of the 55 studies analyzed for this study, only six (10.9%) showed that they did not find a significant difference between the control groups and the one that received the intervention of the pharmacist. The majority (89.1%) revealed that the intervention of the pharmacist saves resources within the institutions. Ten studies have shown that the presence of the pharmacist treating DRP has saved more than one million dollars a year.

Conclusion

All these results show that the clinical pharmacy services program, with the pharmacist acting together with the multidisciplinary team, can save money, which can be related to dosage adjustments, changes in the route of administration, discontinuation or exchange of medicines drug information and education.

References

1. Ernst FR, Grizzle AJ (2001) Drug-related morbidity and mortality: updating the cost-of-illness model. *J Am Pharm Assoc* 41(2): 192-199.
2. (2010) Federação Internacional de Farmacêuticos, OMS. Normas conjuntas FIP/OMS para as Boas Práticas de Farmácia: Diretrizes para a Qualidade dos Serviços Farmacêuticos Versão aprovada pelo *Council Meeting* da FIP. Setembro de 2010.
3. Claus BO, Vandeputte FMR, Robays H (2012) Epidemiology and cost analysis of pharmacist interventions at Ghent University Hospital. *Int J Clin Pharm* 34(5): 773-778.
4. Folland S, Goodman A, Stano M (1997) *The economics of health and health care*. Prentice-Hall Incorporation, Upper Sadle River.
5. Orwin RG (1994) Evaluating Coding Decisions. In H Cooper & LV Hedges (Eds.), *The Handbook of Research Synthesis*, Russell Sage Foundation, pp: 139-162.