COST-EFFECTIVENESS OF ANTIPSYCHOTIC DRUGS FOR FIRST- AND SECOND-LINE TREATMENT OF SCHIZOPHRENIA IN BRAZIL

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INTRODUCTION

Schizophrenia is a chronic debilitating condition characterized by disorders in thought, affect and behavior [1,2]. Its prevalence is 0.2 to 1% worldwide [3,4]. The disease represents a great clinical and economic burden due to poor patient prognosis, low response to available treatments and high social cost [5,6]. An analysis by the World Economic Forum suggests that mental illnesses will have an impact of $16 trillion USD worldwide by 2030 [7]. The indirect costs due to unemployment, absence from work and early mortality are the most relevant drivers of the social costs of schizophrenia [7–11].

The incorporation of substitute technologies may be desirable to stimulate competition in the system, R&D and possible gains in safety, efficacy, effectiveness and cost-effectiveness [12–17]. Furthermore, as the action of antipsychotic drugs varies between patients, an increase in the therapeutic arsenal may improve the adequacy of the pharmacotherapy at the individual level [13,18].

OBJECTIVES

This study aims to conduct an economic evaluation of the list of subsidized antipsychotic drugs in Brazil to allow an adequate choice of pharmacotherapy for the patient and the financial reality of the Brazilian public health system (SUS).

METHODS

A three-year Markov model with quarterly cycles was developed in TreeAge Pro® 2009 to assess the cost-effectiveness of the first- and second-line treatment of schizophrenia with six antipsychotic drugs - haloperidol, chlorpromazine, risperidone, quetiapine, ziprasidone and olanzapine. Clozapine was indicated as third-line treatment. The primary analysis considered expected values [19]. Outcomes were measured in quality-adjusted life years (QALYs). The perspective of the public health system was adopted. BRL values were converted to PPP-USD using OECD conversion rates.

RESULTS

42 different combinations of drugs were evaluated. Only six strategies were not absolutely dominated (**Graph 1**) and, of these, only three were not extendedly dominated (**Table 1**). These were chlorpromazine/olanzapine ($7,063 USD; 1.135 QALY), chlorpromazine/risperidone ($8,132 USD; 1.988 QALY) and olanzapine/risperidone ($8,350 USD; 2.055 QALYs). Incremental cost-effectiveness ratios (ICERs) were generally low (chlorpromazine/ olanzapine vs. chlorpromazine/ risperidone: ICER=1,253 USD/QALY; chlorpromazine/ risperidone vs. olanzapine/ risperidone ICER=3,254 USD/QALY).

Graph 1. Cost-effectiveness of the first- and second-line antipsychotics for the treatment of schizophrenia in Brazil.

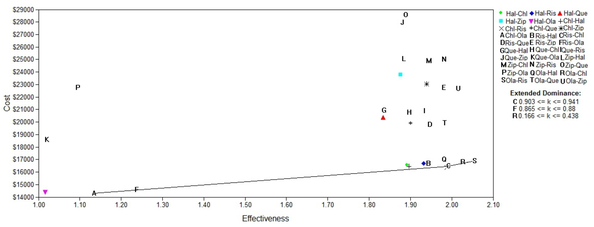


Table 1. Cost-effectiveness of non dominated strategies for the first- and second-line treatment of schizophrenia in Brazil

Drug	Cost (USD 2018)	Incremental Cost (USD 2018)	Effectiveness (QALY)	Incremental effectiveness (QALY)	CER (USD/QALY)	ICER (USD/QALY)
Chl-Ola	$14,296		1.14		$12,595	
Chl-Ris	$16,460	$2,164	1.99	0.85	$8,278	$2,536
Ola-Ris	$16,902	$442	2.05	0.07	$8,226	$6,647

Compared to any proposed cost-effectiveness threshold for Brazil, the strategy olanzapine/risperidone would be considered cost-effective (**Table 2**).

Table 2. Cost-effectiveness of olanzapine for the treatment of schizophrenia in Brazil in terms of various threshold values.

Threshold	Value (USD/QALY)	Is olanzapine/risperidone cost-effective at this threshold?
3 GDP per capita[a]/QALY	$29,464	Yes
1,05 GDP per capita[a]/QALY	$10,312	Yes
1 GDP per capita[a]/QALY	$9,821	Yes
0,62 GDP per capita[a]/QALY	$6,089	Yes
50.000 USD/QALY	$50.000	Yes
20.000 PPP-GBP[b]/QALY	$28,050	Yes

[a]Data extracted from the world bank internet site for 2017; [b]Data from the OCDE.

CONCLUSION

Since olanzapine and risperidone have reasonably different safety profiles and comparable effectiveness, this strategy should be recommended, respectively, for first- and second-line treatment of patients with schizophrenia, who do not have shown previous contraindications to the substances, in SUS.

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