UNIVERSIDADE NOVA DE LISBOA
Escola Nacional de Saúde Pública

Measuring and Decomposing Inequality in Pharmaceutical Consumption in Portugal

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Background

⇨ **Medical prescription**

⇨ **Different levels of co-payments** (5%, 37%, 63% and 85%)

⇨ **Reimbursement system is based both on therapeutic category and on social justice criteria**

Exemptions:

- **Life sustaining drugs; Specific diseases**
- **Income less than the minimum wage - extra reimbursement (15%)**

Are these measures enough to guarantee equity in drug utilization?

Objectives

- ⇨ **Assess the existence of income-related inequities in access to pharmaceuticals in the Portuguese National Health Service:**
  - ⇨ **In the probability of consuming medicines**
  - ⇨ **In the distribution of the NHS resources with prescription drugs**
- ⇨ **Explore possible sources of inequity**

Methodology

Inequality – Income-related distribution of actual use

Concentration Index (co-variance formula)

$$CI = \frac{2}{m} Cov(yi, ri)$$

Inequity – Income-related inequality in health care non attributable to need;

Horizontal Inequity Index compares the distribution of actual use with the distribution of need-standardized use

Decomposition Method

Inequality can be decomposed into its sources (need and non- need factors)

Method developed by Wagstaff, van Doorslaer and Watanabe (Journal of Econometrics, 2003)

Decomposition of Concentration Index

The decomposition requires:

- **An explanatory model of drug utilization**
- **Determination of inequality in each explanatory factor**

$$\mathrm{CI}_y = \sum_K \left(b_k \bar{c}_k / m \right) CI_k + GCI_e / m$$

Data

- ⇨ Portuguese Health Interview Survey 2005/06 (INS)
- ⇨ Multi – stage probability design; representative sample of Portuguese population
- ⇨ Provides information about health status, health care consumption and socioeconomic characteristics
- ⇨ Participants (n = 41 193) were selected from 15 457 individual households;
    - ⇨ Individuals with only NHS coverage;
    - ⇨ Individuals aged more than 18 years;
        - ⇨ 28 613 remained eligible for inclusion in this study;

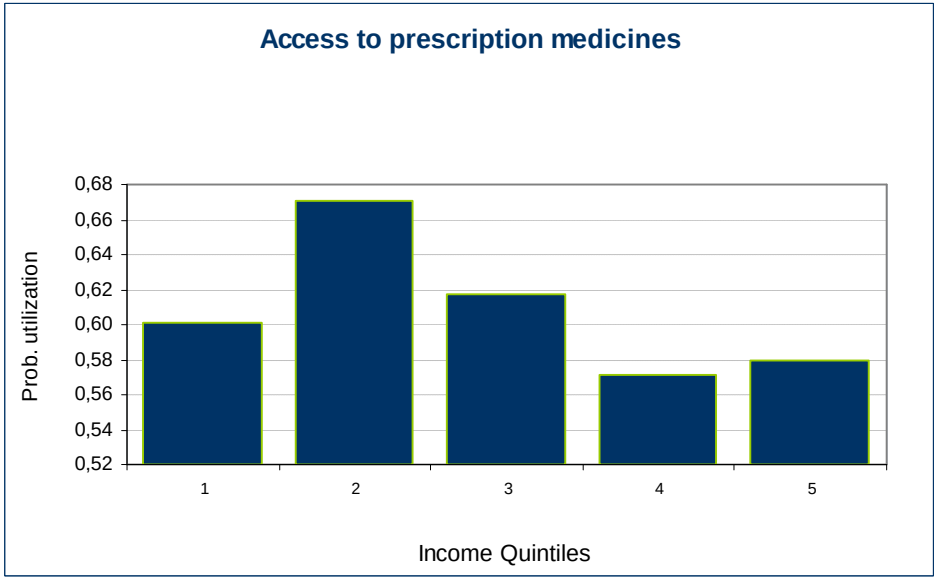
Utilization variables

- **Consumption of medicines** (1=yes; 0=no)
- **NHS Pharmaceutical Expenditure -** Estimated using information about out–of- pocket expenditure, type of drug consumed and reimbursement level

Explanatory variables

- **Need indicators**
  - Chronic Disease (co-morbidity level)
  - Restricted activity
  - Demographic
- **Predisposing and Enabling factors**
  - Educational level
  - Occupation status
  - Income
  - Access to doctors
  - Region
- Disposable income per equivalent adult

RESULTS



$$CI = \frac{2}{m} Cov(yi, ri)$$

Conc. Index	-0,023

Decomposition of Concentration Index

	Concentration index	*Proportion (mean)*	*Marginal effect*	*Elasticity*	*Contribution*
Utilization (1=yes; 0=no)	-0,023	0,607			
Need variables					
Has at least 3 comorbidities	-0,091	0,243	**0,393**	0,158	-0,014
Has 2 comorbidities	-0,022	0,168	**0,311**	0,086	-0,002
Has 1 chronic condition	0,023	0,252	**0,231**	0,096	0,002
No Chronic Condition	reference				
AGE18_24	0,007	0,090	**-0,051**	-0,007	0,000
AGE25_34	0,106	0,141	**-0,025**	-0,006	-0,001
AGE35_44	0,041	0,166	-0,018	-0,005	0,000
AGE45_54	reference				
AGE55_64	0,028	0,154	**0,044**	0,011	0,000
AGE65_74	-0,100	0,161	**0,104**	0,028	-0,003
AGE_75	-0,204	0,121	**0,127**	0,025	-0,005
Male	0,015	0,464	**-0,225**	-0,172	-0,003
Restricted Activity (days)	-0,116	0,752	**0,012**	0,015	-0,002
Need Contribution					**-0,027**
Horizontal Inequity Index	**=(-0,023)-(-0,027)**	**0,005**			

Differences in therapeutic groups

	Concentration Index	Inequality due to need factors	Inequality due to non-need factors	Horizontal Inequity index
Hipertension	-0,065	-0,079	0,007	**0,013**
Osteoporose	0,009	-0,017	0,018	**0,026**
Psychotropics	-0,051	-0,022	-0,028	**-0,029**

AHT – High contribution of previous access to doctor and level of education

Osteoporose - High contribution of income, previous access to doctor and level of education

Psychotropics – High contribution of previous access to doctor and level of education

National Health Service Resources Distribution

- Reported out-of-pocket expenditure with medicines
- Therapeutic class of medicines
- Data from National Regulatory Agency (Infarmed) disaggregated at the same level to estimate the median reimbursement level;
- Fully reimbursed drugs; extra reimbursement levels were considered

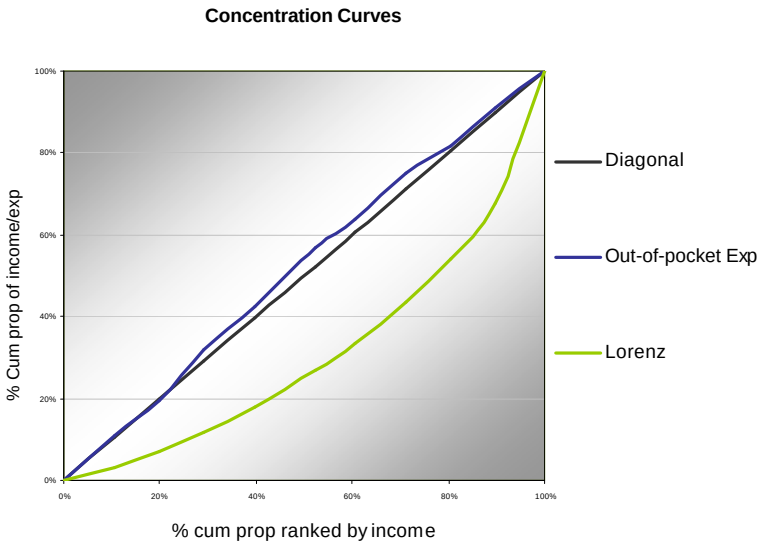
NHS Resources

NHS resources (CI)	-0,034
Horizontal Inequity Index	-0,028

No information about the intensity of utilization

Resource allocation after need standardization seems to favour lower income groups

How about patient's resources?



	CI
Out-of-pocket Expenditure	0,01
Income	0,38
Kakwani	**-0,37**

Highly regressive

Discussion/Conclusions

- Inequity in access to prescription drugs slightly favouring the better off (influence of income and education)
- Differences in access depending on therapeutic group
    - Doctor's decision to prescribe? Drug's price and reimbursement level? Different perception of benefits?

Discussion/Conclusions

- NHS resource distribution according to need favours the worse-off
- No information about the intensity of utilization, only about the resources that NHS spends
- Co-payments are highly regressive for NHS patients

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