

Short Communication

## Price of medicines in a small market country: a comparative approach

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### Abstract

**Objectives** Affordability and availability of medicinal products depend on governmental policies, healthcare budgets and pricing. Pharmaceutical price regulation can improve the accessibility and affordability of essential medicinal products. In Europe, medicinal product prices are assigned individually by each country. The study aimed to compare prices of medicinal products indicated for cardiovascular ( $n = 18$ ) and respiratory disease ( $n = 9$ ) available for retail in community pharmacies in five European countries.

**Methods** Unit dose medicinal product prices in North Macedonia, Malta, Slovenia, Greece and the UK were compared.

**Key findings** Malta had the highest unit dose prices for the majority ( $n = 11$ ) of medicinal products used for cardiovascular disease and the majority ( $n = 8$ ) of the medicinal products indicated for respiratory disease.

**Conclusion** Variation in prices of commonly dispensed medicinal products exists. Having a more thorough knowledge about the prices of medicines in different countries can contribute to making policies that will ultimately make medicines more affordable and accessible to patients.

**Keywords:** medicinal product; cardiovascular disease; respiratory disease; external reference pricing; European countries

### Introduction

Medicine affordability is a key parameter in healthcare in terms of accessibility to medicines. Affordability and availability of medicinal products, in turn, rely on governmental policies, healthcare budgets and pricing.<sup>[1]</sup>

To facilitate national and international comparisons of prices of medicinal products, tools such as the External Reference Pricing (ERP) and Median Price Ratio (MPR) have been developed. The ERP tool that is also known as International Reference Pricing (IRP) is widely used to regulate prices of medicinal products and helps set the price of a medicinal product in a country by comparing prices of medicinal products in different countries. The MPR is a measure developed by the World Health Organization (WHO) and Health Action International (HAI) used to facilitate national and international comparisons of prices of medicinal products. The MPR is calculated by dividing the median local unit price with the

international reference price (IRP).<sup>[2]</sup> ERP, price control and parallel trade help decrease price discrimination between countries and enhance access to medicinal products.<sup>[3]</sup>

The study aimed to compare prices of medicinal products indicated for the cardiovascular and respiratory disease available for retail in community pharmacy in five European countries. The pharmacotherapeutic classes were identified as they are directed towards conditions that are leading causes of morbidity and mortality worldwide.<sup>[4]</sup>

### Method

#### Methodology overview

The study setting was Malta and the four countries that were identified to be included in the study were: North Macedonia, Slovenia, Greece and the UK. Data on prices of medicinal products in included countries had to be accessible online and countries included either

use the ERP system or are included in reference pricing exercises by other countries, namely the UK.

### Selection of medicinal products

Medicinal products indicated for cardiovascular and respiratory disease which are dispensed in retail pharmacies and which are available in the five countries included in the study were compared. The final list included 27 medicinal products belonging to 13 different pharmacological classes.

### Price survey

Data were collected between January 2020 and March 2020. Retail unit prices of medicinal products were compared according to the active ingredient and rounded up to two significant figures. For each country, the cheapest product available for retail having the same active ingredient, dosage form and strength was compared. Prices of medicinal products in North Macedonia were collected using the official virtual medicine registry.<sup>[5]</sup> Retail prices of the selected medicinal products in Malta were collected from a community pharmacy in Valletta. Prices of medicinal products in Slovenia were collected from a list of published retail prices of medicinal products from the official authorities of the Republic of Slovenia.<sup>[6]</sup> Retail prices of medicinal products in Greece were accessed through an online platform called 'Galinos'.<sup>[7]</sup> Prices of medicinal products in the UK were collected from the British National Formulary (BNF), 78th edition.<sup>[8]</sup>

### Data management and statistics

Medicinal product prices were converted to Euro with the monthly average exchange rate as of March 2020 as indicated by the European Central Bank. The price range, average and standard deviation between countries were calculated for each medicinal product. The MPR was determined where possible.

## Results

### Comparison of prices of medicinal products indicated for cardiovascular disease and respiratory disease

Malta had the highest price per unit dose for 11 out of the 18 medicinal products indicated for cardiovascular disease. Malta had the highest price per unit dose for eight out of the nine medicinal products indicated for respiratory disease (Tables 1 and 2).

In the cases of medicinal products for which the IRP was available, Malta had the highest MPR for the majority ( $n = 5$ ) of the medicinal products indicated for cardiovascular disease: amiodarone 200 mg (4.27), carvedilol 6.25 mg (11.31), enalapril 5 mg (65.64), lisinopril 5 mg (11.83) and atorvastatin 10 mg (25.48). Malta had the highest IRP for prednisolone 5 mg (7.02), Greece had the highest MPR for salbutamol 100 µg (2.84) and Slovenia had the highest MPR for salbutamol 2 mg/5 ml (2.84).

## Discussion

The study showed variation in prices of commonly dispensed medicinal products in different European countries. Countries included in the study had different market sizes, socioeconomic statuses and policies. A small market size in a country like Malta, which has a particular geographical position, may face challenges such as high import and export prices, less power of negotiation and less interest

**Table 1** Prices of medicines indicated for cardiovascular disease (n = 18)

Class of medicinal product	Active ingredient	North Macedonia-price per unit (€)	Malta-price per unit (€)	Slovenia-price per unit (€)	Greece-price per unit (€)	UK-price per unit (€)	Price range	Average price	Standard deviation
Anti-arrhythmic	Amiodarone 200 mg tablets	0.08	0.36	0.27	0.10	0.28	0.28	0.22	0.12
	Clopidogrel 75 mg tablets	0.29	0.78	0.39	0.78	1.35	1.07	0.72	0.42
Antiplatelet/antithrombotic	Rivaroxaban 10 mg tablets	2.42	3.04	1.77	2.59	2.05	1.27	2.37	0.49
	Apixaban 5 mg tablets	1.23	1.18	0.92	1.12	1.08	0.31	1.11	0.12
Beta-blockers	Carvedilol 6.25 mg tablets	0.05	0.37	0.08	0.08	0.09	0.32	0.13	0.13
	Atenolol 100 mg tablets	0.06	0.09	0.25	0.10	0.21	0.19	0.14	0.08
Calcium channel blockers	Nebivolol 5 mg tablets	0.20	0.45	0.14	0.09	0.38	0.36	0.25	0.15
	Amlodipine 5 mg tablets	0.02	0.16	0.07	0.19	0.68	0.65	0.23	0.26
Angiotensin converting enzyme inhibitors	Indapamide 1.5 mg tablets	0.08	0.26	0.13	0.11	0.13	0.17	0.14	0.07
	Enalapril 5 mg tablets	0.05	0.45	0.07	0.14	0.17	0.40	0.17	0.16
Angiotensin II receptor blockers	Lisinopril 5 mg tablets	0.15	0.40	0.06	0.10	0.31	0.34	0.20	0.15
	Perindopril 4 mg tablets	0.15	0.62	0.11	0.17	0.24	0.51	0.26	0.21
Statins	Candesartan 8 mg tablets	0.19	0.81	0.17	0.34	0.40	0.64	0.38	0.26
	Valsartan 80 mg tablets	0.21	0.89	0.17	0.27	0.57	0.72	0.42	0.30
Statins	Telmisartan 40 mg tablets	0.23	0.96	0.39	0.22	0.21	0.75	0.40	0.32
	Atorvastatin 10 mg tablets	0.07	0.66	0.17	0.29	0.53	0.58	0.34	0.25
Statins	Rosuvastatin 10 mg tablets	0.22	1.01	0.35	0.73	0.73	0.79	0.61	0.32
	Simvastatin 20 mg tablets	0.10	0.25	0.15	0.23	1.21	1.11	0.39	0.46

**Table 2** Prices of medicines indicated for respiratory disease (n = 9)

Class of medicinal product	Active ingredient	North Macedonia-price per unit (€)	Malta-price per unit (€)	Slovenia-price per unit (€)	Greece-price per unit (€)	UK-price per unit (€)	Price range	Average price	Standard deviation
Corticosteroids	Mometasone 50 µg nose spray	0.06	0.10	0.03	0.10	0.06	0.08	0.07	0.03
	Fluticasone 50 µg suspension for inhalation	0.06	0.10	0.04	0.06	0.08	0.06	0.07	0.02
Corticosteroid + long acting beta agonist	Prednisolone 5mg tablets	0.07	0.08	0.08	0.05	0.06	0.03	0.07	0.02
	Fluticasone furoate, vilanterol 92 µg/22 µg powder for inhalation	0.73	1.65	1.21	1.43	0.84	0.92	1.17	0.39
Corticosteroid + antihistamine	Fluticasone, salmeterol 100 µg/50 µg powders for inhalation	0.41	0.56	0.27	0.37	0.34	0.29	0.39	0.11
	Fluticasone/azelastine 50 µg/137 µg nose spray	0.14	0.17	0.11	0.16	0.14	0.06	0.14	0.02
Short acting beta agonists	Salbutamol 100 µg suspension for inhalation	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.07
	Salbutamol 2 mg/5 ml syrup	0.03	0.06	0.03	0.02	0.02	0.04	0.03	0.02
Leukotriene receptor antagonist	Montelukast 10 mg tablets	0.42	0.71	0.35	0.35	1.10	0.75	0.59	0.32

being attracted for a wider range of medicinal products of the same class or generic equivalents.

North Macedonia which although is not as small as Malta is a relatively small country, has a relatively lower cost of living when compared to other European countries included in the study and a large pharmaceutical manufacturing industry which can be a reason why prices of medicinal products are cheaper. Slovenia which had lower prices for medicinal products uses measures of cost-containment to control public pharmaceutical expenditure and reduce prices of medicinal products.<sup>[9]</sup>

Although the UK is used as a reference country, prices of medicinal products in the UK are high. In 2018, the UK National Health Services (NHS) highlighted the difficulty with keeping a balance between providing timely and effective treatment to patients, encouraging the pharmaceutical sector to develop novel medicinal products and ensuring medicinal product affordability.<sup>[10]</sup>

Although the majority of countries included in the study use the ERP system, the process and availability of the system could vary between countries due to lack of transparent price databases that may lead to errors in published prices. ERP revisions can occur on an irregular basis where price reductions in referencing countries do not occur following price reductions in reference countries.

## Conclusion

This study can be developed to include more countries to generate comprehensive findings in terms of medicinal product pricing in different European countries. Having a thorough knowledge about the prices of medicines in different countries can contribute to making policies that will ultimately make medicines more affordable and accessible to patients.

## Author contributions

Emilija Kochova: primary researcher; Janis Vella Szijj: supervisor and reviewer and Lilian M. Azzopardi: supervisor and reviewer.

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## Conflict of Interest

This work has not been previously published and no other submission or publications will be made. All of the authors listed participated in the study and have agreed to the content of the manuscript.

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