Academic Fora

FULL PAPER PROCEEDING
Multidisciplinary Studies
Available online at www.academicfora.com

Full Paper Proceeding MMHS 2016, Vol. 372 - Issue. 5 , 1-4

ISBN 978-969-683-150-1

MMHS-16

Antidiabetic Drug Consumption and Relation to the Public Health in Kosovo

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Abstract

Diabetes is a chronic disease that occurs when the body either doesn't make enough insulin or can't use its own insulin. Diabetes is an important public health problem, one of four priority noncommunicable diseases (NCDs) targeted for action by world leaders.. According to the WHO the global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014. In Kosovo number of diabetics is still unknown with diagnostics as one of the burdens of the MoH while the number of those treated with insulin according to the National Institute of Public Health is 11000. In the essential list of medicines included are also oral antidiabetics besides insulins. The methodology of the drug consumption is based on the WHO ATC/DDD system with results shown in DDD/inhabitant/day (DID). In this study are also analysed the factors that influence this increase in the consumption and the impact in the public health of the population in the time period 2011- 2015. The study includes also the comparison with the A10B class and the comparison as well with the other countries in the region and Norway. A total of 10 drugs of the A10B class are analyzed according to their INN name (88 brands) from 33 manufacturers. The most used oral antidiabetic is Metformin with 7.01 DID in 2015 followed by Glimepirid with 6.73 DID in 2015. The total consumption of the A10B group for 2015 is 18.02 DID compared in 2015 to Serbia with 73.45 DID, Croatia 48.19, for 2015 in Norway 31.96 DID. Drug utilization of this subgroup of drugs show differences over the years. The result show significant lower consumption which in Kosovo can be either due to the under diagnosis or the undrconsumption. In both cases from the public health point of view this is contrary with the WHO global report on diabetes as "the starting point for living well with diabetes is an early diagnosis – the longer a person lives with undiagnosed and untreated diabetes, the worse their health outcomes are likely to be".

Keywords— Oral Antidiabetics, ATC Classification, DDD, DID, Drug Consumption

Introduction

Diabetes is a chronic disease that occurs when the body either doesn't make enough insulin or can't use its own insulin(1). Diabetes is an important public health problem, one of four priority noncommunicable diseases (NCDs) targeted for action by world leaders (2). According to the WHO (3) the global prevalence of diabetes among adults over 18 years of age has risen from 4.7% in 1980 to 8.5% in 2014 while according to the CDC Diabetes can cause serious health complications including heart disease, blindness, kidney failure, and lower-extremity amputations. Diabetes is the seventh leading cause of death in the United States.

In Kosovo number of diabetics is still unknown with diagnostics as one of the burdens of the MoH while the number of those treated with insulin according to the National Institute of Public Health (4) is 11000. In the essential list of medicines (5) included is included metformin as oral antidiabetics besides insulins.

The treatment of patients with diabetes is done mainly in primary health care centers where for those in need is provided also insulin. As well there are patients wiht more complicated status that get their treatment in secondary and tertiary health care centers.

Methodology

A total of 10 drugs of the A10B class are analyzed according to their INN name (88 brands) from 33 manufacturers. Data were collected from wholesalers in the time period 2011-2013. As this was the first official publication by Kosovo Medicines Agency (KMA) this was the reason of analyzing it for three year period in order to get also the perception of the trend of drug use (6)

Methodology used is based on ATC classification of drugs. According to WHO (7)in the Anatomical Therapeutic Chemical (ATC) classification system, the active substances are divided into different groups according to the organ or system on which they act and their therapeutic, pharmacological and chemical properties, furthermore explaining

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that drugs are divided into fourteen main groups (1st level), with pharmacological/therapeutic subgroups (2nd level), the 3rd and 4th levels are chemical/pharmacological/therapeutic subgroups and the 5th level is the chemical substance.

Furthermore WHO introduced DDD (7) (Defined Daily Dose – as the average maintenance daily dose of a product) and DID (Defined Daily Dose of a product per Inhabitant per Day) which are used for drug utilization studies and also that are used in the analysis for this paper.

The detailed analysis of data included also different indicators needed for final results. These including the total quantity in mg of substance, defined daily dose of the product, time period of the consumption that has been made and population in total.

Data were collected in Excel format due to the lack of other forms of system which would made it easier for analysis. Initially entering it from hardcopy to excel and then validating it and further analyzing according to the desired indicators.

Results

The drugs of the group A are one of the most consumed drugs in Kosovo according to the drug consumption data published by KMA in the time period 2011-2013 are the mostly used in Kosovo comprising 15% of total consumption from all 14 drug classes of ATC classification.

According to ATC level 2, as presented in table 1 the subgroup A02 makes 115.05 DID overall 40% of the consumption among all A level 2 subclass. While second subgroup A10 the one that is analysed in this research represents 80.6 DID 28% of overall consumption of the A group. Together these two subclasses make 68% of the group A consumption among 12 sublasses of the group A in the second level of the ATC classification (Table 1). A10 sublass represents oral antidiabetic agents without insulins.

Table 1:
DID for drug consumption of group A according to ATC level 2 (ref 6)

ATC 2	2011	2012	2013	2014	2015	Total
A	42.79	49.47	54.16	73.26	62.71	282.38
A02	22.40	25.25	16.87	27.90	22.62	115.05
A10	10.37	10.28	20.93	17.31	21.71	80.60
A11	6.31	4.36	8.11	15.79	12.51	47.08
A03	1.65	6.07	6.03	6.68	1.74	22.16
A06	0.91	2.20	0.57	1.96	2.26	7.91
A07	0.48	0.61	0.80	2.27	0.96	5.12
A16	0.43	0.54	0.65	1.09	0.47	3.18
A01	0.11	0.08	0.11	0.20	0.25	0.75
A12	0.08	0.07	0.07	0.02	0.09	0.32
A05	0.04	0.01	0.02	0.04	0.04	0.14
A14					0.06	0.06
A04	0.00	0.00	0.00	0.00	0.01	0.02

According to the level 3 of ATC there are shown only selected agents which has higher numbers of consumption for the five years time period with the three most used subclasses of group A (from 24 in total that are consumed) make 81% of total group A consumption:

1. A02B – Drugs used for peptic ulcer and GERD 113.46 DID 40%
2. A10B – Oral antidiabetic 70.59 DID 25%
3. A11G – Vitamins (Vit C) including combinations 44.43 DID 16%

Comparing these results with the consumption of the same drug class in Norway it is seen that there are many differences. The total consumption of the A10B group for 2015 in Kosovo is 18.02 DID compared in 2015 to Serbia (8) with 73.45 DID, Croatia (9) 48.19, for 2015 in Norway (10) 31.96 DID, while in 2011 consumption was 54.28 DID in France, 44.58 DID- in Germany [11], 33.25 DID - in Estonia, 29.87 DID - in Latvia [12]

Table 2:
DID for Selected Drug Consumption of Group A10B (ref 6)

ATC 3	2011	2012	2013	2014	2015	Total
A	42.79	49.47	54.16	73.26	62.71	282.38
A02B	22.19	24.92	16.52	27.50	22.32	113.46
A10B	9.49	8.94	18.14	15.99	18.02	70.59
A11G	5.58	3.96	7.73	15.08	12.09	44.43
A03B	0.33	4.22	3.83	5.54	0.21	14.14
A10A	0.88	1.34	2.79	1.32	3.69	10.01
A06A	0.91	2.20	0.57	1.96	2.26	7.91
A07A	0.38	0.44	0.65	2.11	0.81	4.39
A03F	0.57	0.76	0.76	0.73	0.87	3.71
A16A	0.43	0.54	0.65	1.09	0.47	3.18

Continuing to analyze each agent or each individual drug it is seen that the most used oral antidiabetic is Metformin with 7.01 DID in 2015 followed by Glimepirid with 6.73 DID in 2015 dominating the overall consumption for the three year period in Kosovo as shown in table three.

Table 3:
Consumption of drugs from group A for according to ATC level 5 (ref 6)

ATC/INN	2011	2012	2013	2014	2015	Total
A	9.49	8.94	18.14	15.99	18.02	70.59
A10B	9.49	8.94	18.14	15.99	18.02	70.59
Acarbose	0.01	0.00		0.00	0.00	0.01
Glibenclamide	4.30	2.02	7.43	3.91	3.37	21.03
Gliclazide	0.20	0.30	0.17	0.12	0.78	1.56
Glimepirid	1.80	2.53	4.48	6.24	6.73	21.79
Metformin	3.18	3.73	6.03	5.54	7.01	25.50
Repaglinide		0.36		0.15	0.02	0.52
Sitagliptin				0.00	0.01	0.01
Sitagliptin metformin					0.00	0.00
Vidagliptin			0.01	0.01		0.02
Vidagliptin + metformin			0.03	0.03	0.10	0.15

Metformin is the mostly used drug in Kosovo with 7.01 DID in 2015. In Serbia in 2015 the consumption is 33.3 DID, in Croatia 18.86 DID in 2014 and in Norway 14.36 in 2015.

Discussion and Conclusion

Metformin is the mostly used drug in Kosovo with 7.01 DID in 2015. In Serbia in 2015 the consumption is 33.3 DID, in Croatia 18.86 DID in 2014 and in Norway 14.36 in 2015. Glimepirid as the second most used in Kosovo with 6.673 DID in 2015 in Seriba the consumption is 23.7 DID, in Croatia the consumption is 13.07 DID and in Norway 7.15 DID in 2015.

The overall consumption of the class A of drugs according to ATC classification is the second mostly used among other drug classes. Consumption of drugs that are used to treat diabetes is increasing in Kosovo over years but unfortunately drug utilization of this subgroup is significantly lower than in the region countries which can be either due to the under diagnosis or the undrconsumption.

In both cases from the public health point of view this is contrary with the WHO global report on diabetes as "the starting point for living well with diabetes is an early diagnosis – the longer a person lives with undiagnosed and untreated diabetes, the worse their health outcomes are likely to be".

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