



Volume 372, Issue 05



December 15-16, 2016

Athens, Greece

MMHS-2016

CONFERENCE
PROCEEDINGS

BOOK OF FULL PAPERS

MMHS-2016

**International Conference on
“Medical, Medicine and Health Sciences”
(ECBA-2016), Athens, Greece**

Book of Full Paper Proceedings
International Conference on
“MEDICAL, MEDICINE AND HEALTH SCIENCES”
(MMHS-2016)
Athens, Greece

Office Address:

M2-17-01 Tower 2, Level 17 8trium

Bandar Sri Damansara,

52200 Kuala Lumpur, Malaysia

CONTACT: (+6) 03 6735 6566

EMAIL: contact@academicfora.com

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without the prior written permission of the publisher. Applications for the copyright holder's written permission to produce any part of this publication should be addressed to the publisher.

Proceedings of the International Conference on
**“Medical, Medicine and Health Sciences
(MMHS-2016)”**

ISBN: 978-969-683-150-1

Disclaimer

Every reasonable effort has been made to ensure that the material in this book is true, correct, complete, and appropriate at the time of writing. Nevertheless the publishers, the editors, and the authors do not accept responsibility for any omission or error, or for any injury, damage, loss, or financial consequences arising from the use of the book. The views expressed by the contributors do not necessarily reflect those of the Academic Fora.

Conference Review Board Academic Fora

Medical and Health Sciences Review Board

1. Dr. Mary Joy Sande, Bicol University, Philippines
2. Dr. Jesu Raj, Loyola College, India
3. Dr. Naila Aaijaz, Focus Education, Canada
4. Dr. Ora Danimo, Ma'ananim Trauma Center, Israel
5. Ivneet Walia, Rajiv Gandhi National University of Law, India
6. NG Hoi Nga Anna, Caritas Institute of Higher Education, Hong Kong, China
7. Dr. Ikhlas Ali Abdalla, Kuwait University, Kuwait
8. Parameswaran. S, Linton University College, Legenda Educational Group, Mantin, Malaysia
9. Salim Hiziroglu, Ph.D. Oklahoma State University, Stillwater, Oklahoma
10. Dr Amirhosein Ghaffarianhoseini, University of Malaya (UM), Malaysia
11. Prof. M. Peters Berg Research Professor, University of Waikato, New Zealand
12. Raffaelee Cavalli , University of Padova, Italia
13. Brce Talbot Skog og landskap, Norway
14. Dr. S.Raghunadha Reddy Research Scholar at School of Pharmacy, University of Maryland
15. Dr. Thitiphan Chimsook, Department of chemistry, Faculty of Science, Maejo univeristy Thailand

International Conference on
“Medical, Medicine and Health Sciences
Athens, Greece”

Venue: Athens Tiare Hotel Peiraios 2 str, 10431, Athens, Greece

ORGANIZING COMMITTEE

1. Ms. Grace Ooi

Program Coordinator

Email: grace@academicfora.com

2. Mr. Metin Gurani

Conference coordinator

Email: metingurani@academicfora.com

3. Mr. Metha Shahi

Conference coordinator

Email: Metha@academicfora.com

4. Ms. Petrel Qiu

Conference coordinator

Email: Petrel@academicfora.com

CONFERENCE CHAIR MESSAGE

Dr. Malika Ait Nasser

International Conference on “Medical, Medicine and Health Sciences” serves as platform that aims to help the scholarly community across nations to explore the critical role of multidisciplinary innovations for sustainability and growth of human societies. This conference provides opportunity to the academicians, practitioners, scientists, and scholars from across various disciplines to discuss avenues for interdisciplinary innovations and identify effective ways to address the challenges faced by our societies globally. The research ideas and studies that we received for this conference are very promising, unique, and impactful. I believe these studies have the potential to address key challenges in various sub-domains of social sciences and applied sciences.

I am really thankful to our honorable scientific and review committee for spending much of their time in reviewing the papers for this event. I am also thankful to all the participants for being here with us to create an environment of knowledge sharing and learning. We the scholars of this world belong to the elite educated class of this society and we owe a lot to return back to this society. Let's break all the discriminating barriers and get free from all minor affiliations. Let's contribute even a little or single step for betterment of society and welfare of humanity to bring prosperity, peace and harmony in this world. Stay blessed.

Thank you.

Malika Ait Nasser

Conference Chair

Email: Chair2016@academicfora.com

MMHS-2016

CONTENTS

Articles

Antidiabetic Drug Consumption and Relation to the Public Health in Kosovo	1
--	----------

Arianit Jakupi

MMHS-16

Antidiabetic Drug Consumption and Relation to the Public Health in Kosovo

Arianit Jakupi*

A2 – Pharmaceutical Consulting, Kosovo

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 underconsumption. 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".

© 2016 The Authors. Published by Academic Fora. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Peer-review under responsibility of the Scientific & Review committee of MMHS- 2016.

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 with 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

*All correspondence related to this article should be directed to Arianit Jakupi, A2 – Pharmaceutical Consulting, Kosovo

Email: arianiti@gmail.com

© 2016 The Authors. Published by Academic Fora. This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Peer-review under responsibility of the Scientific & Review committee of MMHS-2016.

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 subclasses of the group A in the second level of the ATC classification (Table 1). A10 subclass 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 Serbia 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 underconsumption.

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".

References

1. Diabetes (2016) . Retrieved from <http://www.cdc.gov/diabetes/index.htm>
2. WHO (2016). *Global report on diabetes*. WGO International.
3. WHO. (2013). *Global action plan for prevention and control of noncommunicable diseases 2013 – 2020*. Geneva Switzerland.

4. National Institute of Public Health of Kosovo. (2013). *Analiza e morbiditetit të popullatës së Kosovës për vitin 2011*. Retrieved from http://www.niphkosova.org/index.php?option=com_jdownloads&Itemid=6&view=view.download&catid=3&cid=58
5. MoH. (2016). *Essential medicines list*. Retrieved from <http://msh-ks.org/>
6. Jakupi, A. (2014). *Drug consumption in Kosovo 2011-2013*. Kosovo Medicines Agency. Prishtina Kosovo.
7. WHO. (2014). *Structure and principles of ATC classification*. Available from http://www.whooc.no/atc/structure_and_principles.
8. Alims. (2016). *Marketing and consumption of finished drugs for humanuupotrebu in the Republic of Serbia in 2015*. The Agency for Medicines and Medical Devices Belgrade. Serbia
9. Halmed . (2016). *Consumption of drugs 2015*. Available from http://www.halmed.hr/fdsak3jnFsk1Kfa/publikacije/Potrosnja-lijekova-u-RH_2010-2014.pdf.
10. Sagsahug, S. (2013). *Drug consumption in Norway 2008 – 2012*. National Institute of Public Health. Norway.
11. Pichetti, S., Sermet, C., & Van der Erf, S. (2013). The diffusion of new anti-diabetic drugs: An international comparison. *Questions d'economie de la sante / n 187 - May 2013*. Retrieved from <http://www.irdes.fr/EspaceAnglais/Publications/IrdesPublications/QES187.pdf>
12. WHO. (2013). *Baltic statistics on medicines 2010-2012*. Retrieved from www.ravimiamet.ee/.../baltic_statistics_on_medicines_2010_2012/baltic_statistics_on_medicines_2010_2012.pdf

FUTURE EVENTS

You can find the Details regarding our future events by following below:

Business, Economics, Social Science & Humanities (BESSH) Conferences:

<http://academicfora.com/buisness-conference-home/>

Engineering & Technology, Computer, Basic & Applied Science

<http://academicfora.com/engineering-conference-home/>

Medical, Medicine & Health Science

<http://academicfora.com/medical-conference-home/>

For Publication Process please always Contact on:

Publication@academicfora.com

VISION

**“Our vision is to promote research
excellence through networking platform**

MMHS-2016

Athens, Greece

**International Conference on
Society for Medical, Medicine
and Health Sciences**

Organized By:



Academic Fora