



CONSUMPTION OF MEDICATIONS IN ELDERLY AND RISKS OF POLYPHARMACOTHERAPY – DO WE HAVE ADEQUATE INFORMATION?

**H. Kubesova¹, J. Holik¹
P. Weber¹, V. Polcarova¹
J. Matejovsky², K. Greplova¹
J. Slapak¹**

¹*Department of Internal Medicine, Geriatrics, and Practical Medicine Masaryk University, Faculty of Medicine, Faculty Hospital Brno, Czech Republic*

²*Ratiopharm CZ, s.r.o Brno, Czech Republic*

e-mail: hkubes@med.muni.cz

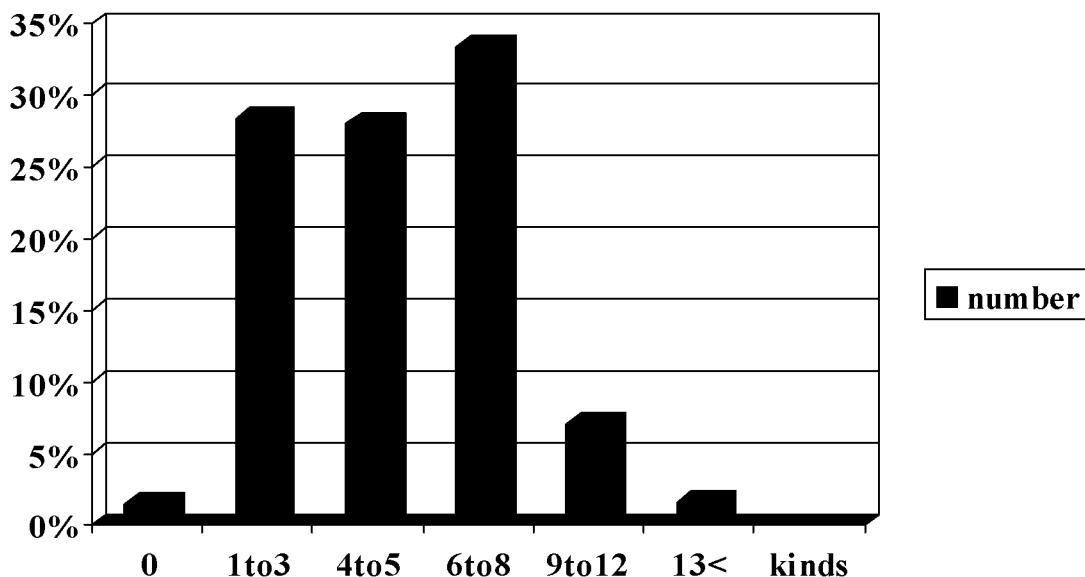
The problem of pharmacotherapy is important problem of modern clinical practice. The review and results of own investigations are presented in this article.

Key words: elderly, pharmacotherapy

It has been generally known that patients of higher age suffer from more diseases. Patients above 80 years of age are treated for more than 2 chronic diseases in 80 %. The tendency to treat all known diseases of our patients means accumulation of the drugs used. In our previous studies we found the average number of daily used types of drugs to equal 4 – 5 (1) (see Graph No. 1).

Graph No. 1

Number of prescribed types of drugs



We divided our group of patients according to age and did not find any significant differences in the number of drugs used, even if we considered patients with the highest number of drugs used – see Graph No. 2. Women tended to use more kinds of drugs – see Graph No. 3.

It is not easy to establish a limit for the “adequate” number of drugs used in the elderly population. The term polypragmasy can be quite relative in this group of patients. If we consider a very common combination of diseases in the elderly man – ischaemic heart disease, diabetes mellitus, hypertension, and spondylosis – the basic therapy comprises 6 types

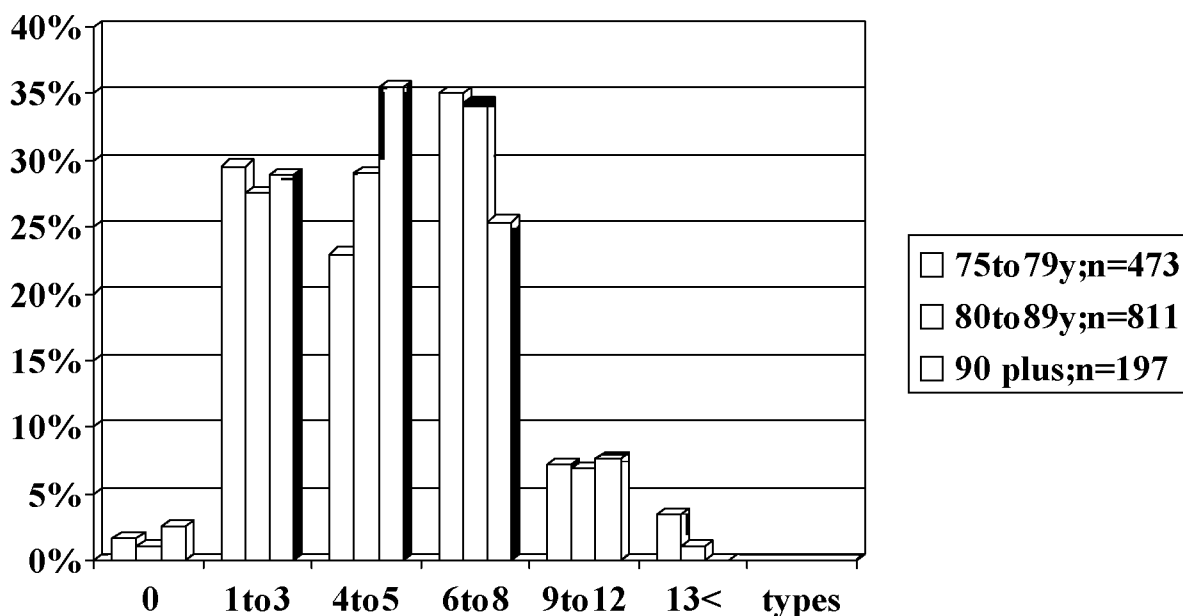


of drugs at least. The situation in women concerning the number of drugs taken is very similar – if we consider, e.g., ischaemic heart disease, osteoporosis, and hypochromia.

Similar results can be found in the literature – the authors from Denmark published study results of interviews with patients just discharged from the hospital. The theme of these interviews was medication. The average number of the used types of drugs was 8 daily, ranging from 1 to 24. As regards the number of drugs stored at home, the average number was 9, though ranging from 1 up to 44 (2).

Graph No. 2

Number of drugs used according to age



To have an overview of the patient's medication, we have to consider yet other influences – publicity, families, neighbours, etc., undoubtedly increasing the amount of drugs used by over-the-counter drugs. However, patient's information usually does not comprise these drugs. The aim of our small study was to realize, how much OTC drugs buy our patients

Patients characteristics and methods. We have arranged a simple study in co-operation with general practitioners – contracted teachers of the Faculty of Medicine of Masaryk University in Brno. Medical students of the 6th year spend a 2-week stay at the GP's office as part of their study programme. Our students interviewed elderly patients on OTCs usage from 2001 to 2005. The questions were aimed at the number, types and price of OTCs, and additional payments for prescribed drugs.

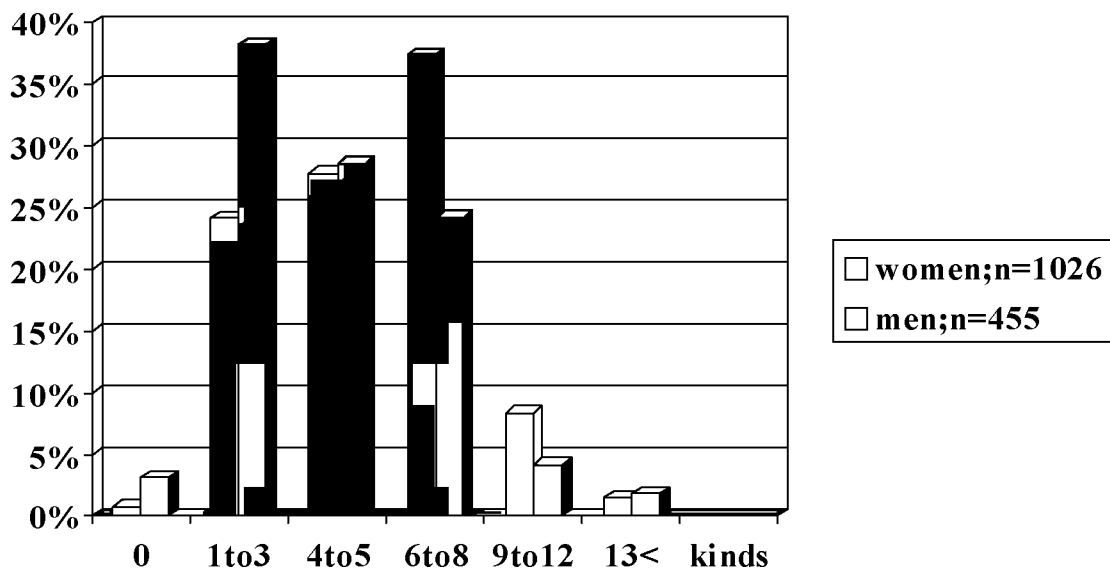
Results. The results were surprising. There were 400 responders, 252 women and 148 men of average age $78,7 \pm 4,2$ years. The average number of regularly bought OTCs was $2,26 \pm 1,79$ at the beginning and $2,32 \pm 2,25$ at the end of the study. Almost 60 % of elderly patients have been buying vitamins, 30 % nonsteroidal anti-inflammatory drugs, and 43 % of seniors have been buying analgesics – see graph No. 4.

Concerning the frequency of purchases, vitamins and nonsteroidal antirheumatics were bought on regular basis – monthly or weekly, other groups of medicaments occasionally or exceptionally.



Graph No. 3

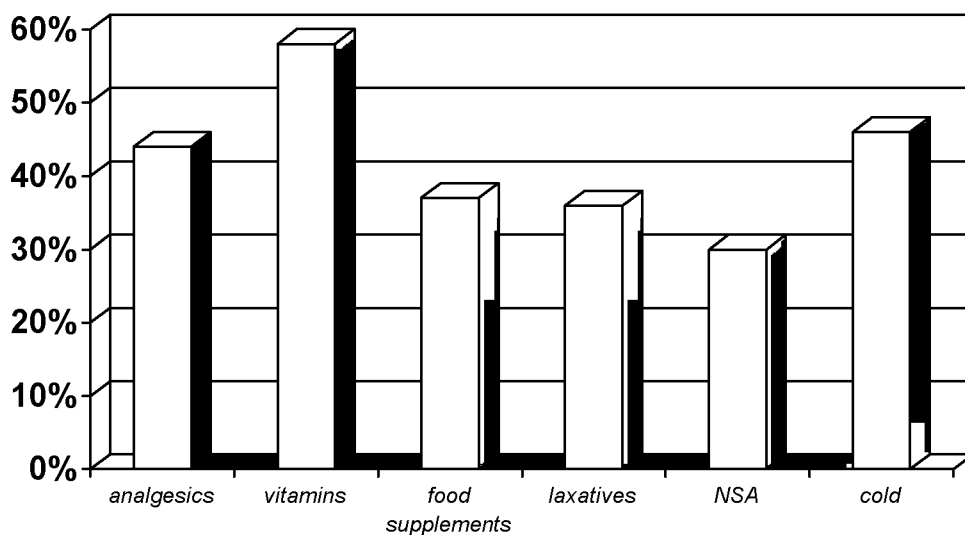
Number of drugs used according to gender



The difference between men and women was interesting – women bought significantly less laxatives and significantly more vitamins – see graph No. 5.

Graph No. 4

Most frequently bought OTCs in a population above 75 years of age (NSA – nonsteroidal antirheumatics)



The increase of OTCs purchases was about 10 % during our study (from 2001 to 2005), and only 5 % in vitamins. This development is influenced by changes in the health insurance system and the ensuing increase of additional payments on the one hand, and, on the other, by increasing availability of OTCs on the market. The average amount of money spent monthly for OTCs increased from 93 CZK to 114 CZK, which is 20 % more. Additional payments for prescribed drugs were monthly 95 CZK in 2001 and 152 CZK in 2005, which means a 60 % increase. The maximum additional payment rose monthly from 750 CZK to 1500 CZK, the maximum monthly cost for OTCs rose from 670 CZK in 2001 to 870 CZK in 2005.

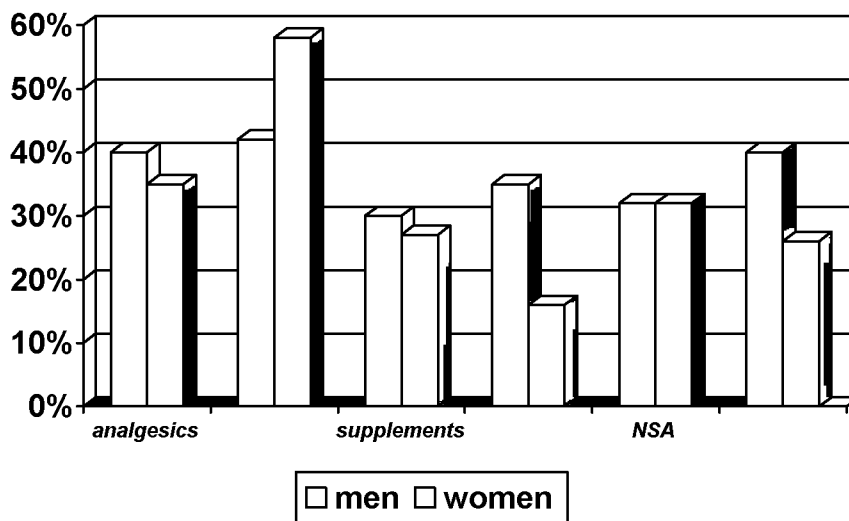
Surprisingly, we did not find any negative correlation between additional payments for prescribed drugs and costs for OTCs. On the contrary – patients with higher



additional payments for prescribed drugs tended to buy more OTCs. The average number of OTCs taken was 2.2 types in our group of patients.

Graph No. 5

**OTCs purchases according to gender.
(NSA – nonsteroidal antirheumatics)**



Discussion Results of our study did not differ from studies done in other countries – there is not usual in our country among physicians and patients as well to consider OTCs as a normal part of treatment schedule and to discuss the use of them freely. The positive impact is the patient's activity to improve his health status and to have more information about his disease, however the general practitioner and/or specialist should be informed about taken OTCs to be able to create the comprehensive therapeutic scheme. On the other hand there is possible to observe a little bit nonsense situation – patients are discussing thoroughly about few crowns of additional payment and immediately they spend hundreds of crowns for OTCs.

Conclusions of Italian and british authors show interesting ways how to decrease costs of prescribed drugs and OTCs as well. Altogether 70% of patients consider their costs of medications as important. The easiest way how to decrease the amount of money spent for medications is to abandon prescribed drugs and not to take them from the pharmacy. Italian patients have to pay lower additional payments, so they prefer physician's prescription. Additional payments for medications are higher in Great Britain British, so patients prefer to buy OTCs (3).

We have to consider OTCs as a substantial part of pharmacotherapy of our patients. We must take into account a possible potentiation of the interactions and unwanted side effects as the cause of unclear worsening of the patient's health status. Patients usually do not inform their physicians about the OTCs used for different reasons. Our experience is similar to the results of American and Canadian authors showing 33% of patients in Canada and 20% patients in United States don't inform their general practitioner about use of OTCs (4).

Our patients frequently do not rate OTCs as full-value medicaments because of their labelling as food supplements, mostly due to the politics of pharmaceutical companies to penetrate more simply the market. An overview of the potent influence of OTCs can be obtained by comparing payments in drugstores in hospitals and downtown: hospital pharmacists report OTCs as 20-30 % of the sales, drugstores downtown up to 80 %.

The most frequent impulse to buy OTCs is painful form of oosteroarthritis in elderly patients, they prefer nonsteroid antirevmatics in comparison with simple analgetics. The effectivity of treatment must be evaluated with regard to possible complications – gastrointestinal bleeding, nefrotoxicity, haematological complications (5).

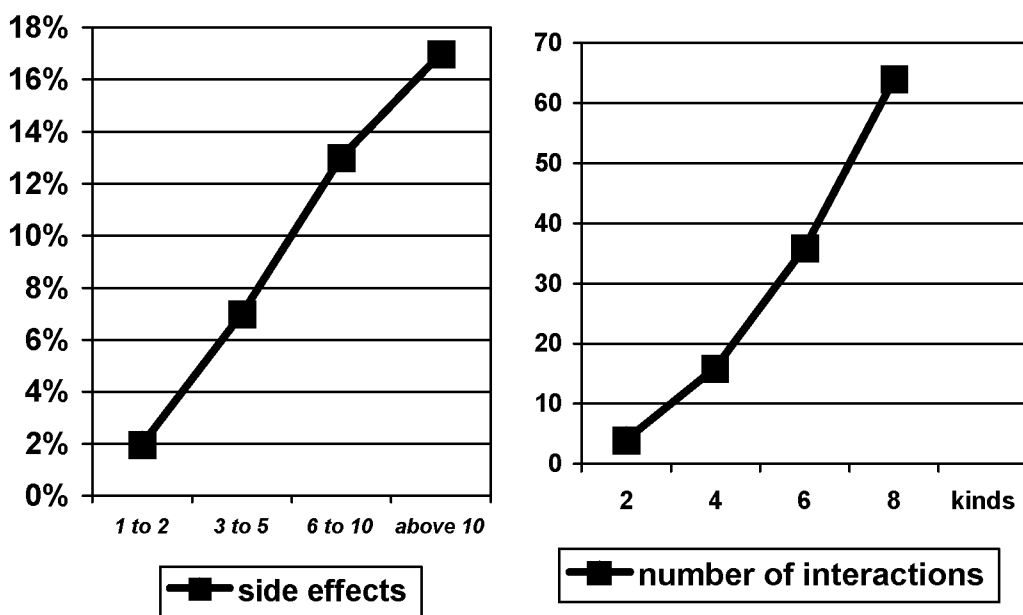


The alcohol consumption must be taken into account in elderly – different authors present up to 44% seniors drinking alcohol, most of them on regular basis, but we are not accustomed until now to include this fact into our calculations of possible drug interactions for example in antihypertensive or antiarrhythmic therapy or the complex influence by cytochrome P450 activation (6).

The main risk of multiple pharmacotherapy is the increasing number of unwanted side effects. If our patients use 6 types of drugs, we have to expect unwanted side effects in each tenth – see graph No. 6. From the point of view of interactions we have to consider an exponential increase – thus with 6 used medicaments 40-50 interactions can appear – see graph No 6. Not all of these interactions are clinically serious, of course. The results of many studies prove that the higher is the number of medications used, the higher is the number of mistakes and the worse is the patient’s compliance (7). All these facts underline the everyday experience – up to 28 % of the hospitalisations of elderly patients are caused by mistakes, unwanted side effects, and interactions in their pharmacotherapy (8).

Graph No. 6

The influence of the increasing number of medicaments on the appearance of unwanted side effects and interactions



Our attention should be paid not only to OTC medications and food supplements but also to natural, mostly plant products. Our patients prefer these products frequently as natural and “certainly harmless”. We already know for a long time that plants can be contaminated by pesticides and moulds, while the composition of these products is inconstant according to place and soil parameters. Any plant product comprises many chemical components, which can increase substantially the number of interactions and side effects. The results of a study conducted in Denmark showed that 14 % of men and 22 % of women have been using natural products. No relationship was found to the level of education (9). Significantly higher number of patients with more diseases tended to use more plant products – this finding is similar to our study results.

Another study estimated the reasons of kidney damage by plant products. As main deficiencies were detected errors in plant determination, errors in extract preparation, lack of information about the substance and its interactions, and lack of specialised supervision during the preparation process (10, 11).



Conclusions for practice:

**be interested in OTCs used by your patient;
obtain objective information in co-operation with the patient's relatives and friends;
in case of unsuitable combinations explain the risks to your patient, discussing further strategy;
be informed basically about OTCs even if you yourself do not prescribe them and do not recommend them.**

Literature

1. Kubeshova, H. Farmakoterapie starsich klientů praktickeho lekaře – teorie a skutečnost / H. Kubeshova et al. // Geriatria. – 2000. – Vol.VI(3). – P. 27-32.
2. Glintborg, B. Drug-drug interactions aminy hospitalized patiens – frequent but mostly clinically insignificant/ B. Glintborg, S.E. Andersen, K..Dalhoff // Eur J Clin Pharmacol. – 2005; Jul: 27
3. Atella, V. Affordability of medicines and patiens cost-reducing behaviour: Empirical evidence based on SUR Estimates from Italy and UK/ V. Atella et el. // Appl Health Econ Policy. – 2005. – Vol. 4(1). – P. 23-25.
4. Riley-Doucet, C.K. Canadian and Američan self treatment of pain: a comparison study/ C.K. Riley-Doucet, J.M. Fouladbakhsh, A.H. Vallerand // Rural Repote Health. – 2004. – Jul-Sep; 4(3).
Ehrlich, G.E. A benefit risk assessment of therapeutic alternatives for the treatment of painful inflammatory conditions / G.E. Ehrlich // Int. J. Clin. Pract. Suppl. – 2004. – Oct, Vol. 144. – P. 20-6.
5. Aira, M. Community prevalence of alcohol use and concomitant use of medication – a source of possible risk in the elderly aged 75 and older? / M. Aira, S. Hartikainen, R. Sulkava // Int J Geriatr Psychiatry. – 2005. – Jul, Vol. 20(7). – P. 680-5.
6. Barre, E. Drug interactions in elderly population. Prospective assessment of their frequency and seriousness among 56 patients/ E. Barre // Presse Med. – 2005. – Jul 2; Vol. 34(12)/ – P. 837-841
7. Colson, C.R. Kidney injury from alternative medicines / C.R. Colson, M.E. De Broe // Adv Chronic Kidney Dis. – 2005. – Jul; Vol. 12(3). – P. 261-75.
8. Henderson, L. St John?s Wort (Hypericum perforatum): drug interaction and clinical outcomes / L. Henderson // Br J Clin Pharmacol. – 2002. – Vol. 54. – P. 349-356.
9. Nielsen, M.W. Use of natural medicines in the danish population: a national cross-sectional survey / M.W. Nielsen, E.H. Hansen, N.K. Rasmussen // Ann Pharmacother. – 2005. – Sep; Vol. 39(9)/ – P.1534-8.

МЕДИКАМЕНТОЗНОЕ ЛЕЧЕНИЕ В ПОЖИЛОМ ВОЗРАСТЕ И РИСКИ ПОЛИФАРМАКОТЕРАПИИ – ИМЕЕМ ЛИ АДЕКВАТНУЮ ИНФОРМАЦИЮ?

**Г. Кубешова¹, Й. Голик¹
П. Вебер¹, В. Полцарова¹
Я. Матейовский², К. Греллова¹
Я. Шлапак¹**

¹ Клиника внутренних болезней, геритарии и общей врачебной практики Университета им. Масарька

г. Брно, Чехия

² Представительство фармпредприятия "Ратифарм-Чехия"

г. Брно

e-mail: hkubes@med.muni.cz

Вопросы фармакотерапии в пожилом возрасте являются актуальными в сегодняшней клинической практике. В настоящей статье представлен обзор литературных данных и результатов собственных наблюдений по данной проблеме.

Ключевые слова: пожилой возраст, фармакотерапия.