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*The knowledge of undesirable actions of non-steroidal  
anti-inflammatory drugs (NSAID) among people  
with a diagnosed chronic disease and healthy people*

The reform of the Polish health service, conducted by the end of the twentieth century and modelled on the Health Care in the United States and in the western European countries, led not only to essential organizational changes in the Polish Health Care System but also to significant modifications in the doctor/patient relations. Those changes led to breaking with biomedical model of the health service, according to which the patient should be passive in the medical healing process. The essence of the new, holistic medicine trend is the active participation of a person in the actions in favour of their health - the patient stopped being only 'the object of research.' In the holistic model of health care he is an active member of the medical team. On the basis of the information on the advantages and risks connected with various methods of treatment obtained from the doctor, the patient makes a competent decision about his treatment (1). The active participation in the medical healing process requires the basic medical knowledge from the patient. Unfortunately, the results of the sociometrical survey indicate low level of the health knowledge of the individual in the Polish society. The results of the research conducted in the Internal Medicine Clinic in Kraków at the end of the previous century are surprising. A random hundred of patients were asked to define the position of eight most important integral organs (intestines, urinary bladder, liver, stomach, kidneys, thyroid, lungs and heart). Only one of those patients indicated the correct localization of those organs. Most candidates located intestines correctly (95%). Less than a half of the questioned (38%) knew where their heart is located (2). The problem of self-treatment of pain based on application of non-steroidal anti-inflammatory drugs (NSAID) that are available without prescription is the example of the influence of the unfavourable low level of the basic medical knowledge on the active and competent participation in healing processes. The essence of this problem is an easy access to this group of medicines together with the advertisements of NSAID in the mass media. The commercials creating in the media the image of wonderful drugs without any side effects resulted in treating those medicines as a panacea for all the pain diseases. Presumptions on the intelligent action of NSAID, reaching only the place where the pain is located without any further complications are not confirmed. When misused, those drugs pose serious health threat. The low social awareness caused by the confidence in the TV commercials intensifies this threat.

The main undesirable action that follows the chronic treatment with NSAID are complications connected with digestive tract. Ulceration of the mucous membrane of the digestive tract appear

with 12–30% of the patients, digestive erosions are common with up to 70% of the patients taking NSAID, and one person out of one hundred and fifty suffers from a bleeding ulcer (3). Toxicity in the cells of the epithelium mucous membrane is connected with inhibitory influence on the activity of COX-1, which leads to inhibition of the synthesis of prostaglandins that play an important role in physiological processes in the epithelium mucous membrane of the digestive tract (secreting mucus, blood flow in the mucous membrane and its regeneration, among others) (4).

Nephritic symptoms connected with the disturbances of the flow in the kidneys caused by a change in the proportion of prostaglandins (PGE2 and PGI2 blockade) can be observed, of which most common are acute renal failure, chronic interstitial renal failure, hyperkalemia and hypertension. The most susceptible to developing renal failure after using NSAID are patients encumbered with other kinds of renal disease and the elderly. Up to 30% of people suffering from a renal disease are under the risk of deterioration in their kidneys' functioning after applying NSAID, which are ranked second after aminoglycosides (3, 5) with respect to the frequency of causing iatrogenic acute renal failure.

The issue of possible undesired interactions of NSAID with other drugs is also significant. In many studies it has been proven that NSAID have negative influence on the effectiveness of hypotensive drugs, angiotensin converting enzyme (ACE) inhibitor among others. The hypotensive action of ACE is a result of blocking convertase activity. This enzyme is responsible not only for the metabolism of angiotensin I into angiotensin II, but also for catalyzing degradation reaction of bradykinin, an enzyme causing the release of vasodilatory prostaglandins from kidneys and other tissues. By dilating the vessels of the circulatory and renal system, prostaglandins lower the blood pressure. Application of NSAID in a combination with ACE lowers the concentration of vasodilatory prostaglandins released under the influence of bradykinin, which at the same time decreases the effectiveness of ACE in lowering the blood pressure (6–8).

The purpose of the research was an attempt to compare the knowledge level of healthy people and people with a diagnosed chronic disease concerning the application of NSAID available without prescription.

#### MATERIAL AND METHODS

The research was carried out through a diagnostic opinion poll, which was attended by 125 people (87 women, 38 men) aged 16–80. The experiment included the area of Podkarpackie and Świętokrzyskie provinces. The diagnosed population was divided into two groups: 1) the control group, which consisted of healthy people (69 people: 54 women, 15 men), 2) the treatment group, to which people with a diagnosed chronic disease were assigned (56 people: 33 women, 23 men) – 20 people (35.71%) with hypertension, 8 (14.28%) with diabetes, 19 people (15.2%) with both diabetes and hypertension, 6 (10.71%) with renal diseases, 3 (2.4%) with other chronic diseases (including gastric/duodenal ulcer disease).

The questionnaire consisted of 16 closed questions relating to the most common reasons for taking analgesics, main sources of information about applied drugs, places where they were purchased as well as factors determining the choice of a particular drug among others. During filling in the questionnaire the respondents often circled more than one answer per question, which is the reason why the percentage figures in the tables do not total up to 100.

## RESULTS

Both men and women mentioned headache as the most common reason for using NSAID available without prescription (61 women, 17 men). As many as 78 respondents (62.4%) took a drug from the NSAID group in case of a headache. Every third woman (32.18%) used analgesics due to dysmenorrhea and every fifth (17.24%) because of muscular and articular pain. The men took NSAID mainly because of a headache (44.73%), as well as a toothache (36.84) and muscular and articular pain (34.21%). The least mentioned reason for using NSAID given by the respondents was sinus pain (4%) (Table 1).

Table 1. The reasons of taking NSAID accessible without prescription

	Healthy women	Ill women	Total	(%)
Headache	40	21	61	70.11%
Menstrual pain	23	5	28	32.18%
Muscle pain & joint pain	2	13	15	17.24%
Toothache	9	1	10	11.49%
Sinuses pain	2	1	3	3.44%
	Healthy men	Ill men	Total	(%)
Headache	8	9	17	44.73%
Muscle pain & joint pain	2	11	13	34.21%
Toothache	6	8	14	36.84%
Sinuses pain	2	0	2	5.26%

The most important factor influencing the choice of NSAID analgesics, according to the respondents, was the effectiveness of the drug (69 people; 55.2%). For the people from the control group the crucial meaning has the speed of action of the medicine (30 people; 43.47%). Only 23 of the questioned (18.4%), when choosing the drug, paid attention to the possibility of occurrence of side effects in connection with taking a specific medicine (15 healthy people [21.73%] and 8 people with a chronic disease (14.28)). Every sixth healthy respondent (15.94%) and every eleventh with a diagnosed chronic disease (8.92) admitted to paying attention to the price of the drug (Table 2).

Table 2. The factors deciding about the choice of painkiller from the NSAID group

Control group →	Healthy women	Healthy men	Total	(%)
Efficacy of action	27	8	35	50.72%
Effectiveness	23	7	30	43.47%
No undesirable actions	13	2	15	21.73%
Price	7	4	11	15.94%
Advertisement	1	2	3	4.34%
Tested group →	Ill women	Ill men	Total	(%)
Efficacy of action	18	16	34	60.71%
Effectiveness	6	6	12	21.42%
No undesirable actions	5	3	8	14.28%
Price	5	0	5	8.92%
Advertisement	3	0	3	5.35%

Out of 125 respondents, as much as 111 people (58 healthy and 53 ill ones) declared that, despite the fact that analgesics are available without prescription, they buy those drugs at the chemist's and not at other places, such as the grocer's, the newsagent's or a petrol station. This favourable trend was visible especially with the people with a diagnosed chronic disease, whereas the unfavourable

results were received in a group of the healthy people – those respondents more often marked the other places of the purchase of the NSAID (58 people) than the chemist's (Table 3).

Table 3. Places of purchase of NSAID accessible without prescription

Control group →	Healthy women	Healthy men	Total	(%)
Chemist's	48	10	58	84.0%
Newsagent's	33	10	43	62.31%
Grocer's	25	9	34	49.27%
Petrol station	3	5	8	11.59%
Tested group →	Ill women	Ill men	Total	(%)
Chemist's	32	21	53	94.64%
Newsagent's	11	7	18	32.14%
Grocer's	5	3	8	14.28%
Petrol station	1	0	1	1.78%

The availability of NSAID in such places as the newsagent's, supermarket, etc., deprives the patients of the possibility of consultation with a pharmacist on the effectiveness of the drug and the risk of occurring the health complications after taking it. Only 27 (21.6%) respondents consulted the purchase of the analgesic with a pharmacist. As the main source of information on the NSAID the people give a leaflet attached to a package (65.21%) and commercials in the media (47.82%); only 13 of the respondents consult a doctor. On the other hand, for the people with a diagnosed chronic disease the doctor's advice was the primary source of information on the treatment with NSAID (72.42%) (Table 4).

Tab. 4. Source of information about NSAID according to the questioned people

Control group →	Healthy women	Healthy men	Total	(%)
Advertisement	24	9	33	47.82%
A leaflet	35	10	45	65.21%
Pharmacist	14	6	20	28.98%
Doctor	12	1	13	18.84%
Tested group →	Ill women	Ill men	Total	(%)
Advertisement	6	3	9	16.07%
A leaflet	14	10	24	42.85%
Pharmacist	6	1	7	12.50%
Doctor	22	18	40	71.42%

The phenomenon of commonness of the commercials advertising analgesics in mass media is alarming. The advertisements are no objective source of information, as they show only the advantages of using a drug, such as the speed of action and its effectiveness, whereas they omit the possibility of occurrence of the health complications as a result of the wrong usage of the medicine. The confidence in a commercial makes people believe that NSAID have obtained the status of safe drugs that can be taken without any limits. Almost the half of the respondents (47.2%) regarded the advertisements of NSAID in media as a source of information about those drugs. Fortunately, not all the respondents trust the commercials in media so immensely. Every second respondent (52.8%) believed that the task of the commercial is to advertise the product in a most effective way and to omit the possible disadvantages. For those people, it is not a reliable source of information but only a gimmick (Table 5).

Table 5. Interpretation of NSAID adverts in the media

Control group →	Healthy women	Healthy men	Total (%)
Information verified by a doctor	2	1	3 4.34%
A reliable source of information about drugs	0	1	1 1.44%
Information about new drugs	25	5	30 43.47%
Marketing tricks	27	8	35 50.72%
Tested group →	Ill women	Ill men	Total (%)
Information verified by a doctor	2	3	5 8.92%
A reliable source of information about drugs	2	3	5 8.92%
Information about new drugs	10	5	15 26.78%
Marketing tricks	19	12	31 55.35%

The aim of our survey was to define our respondents' level of knowledge concerning the risk of development of the undesirable actions as results of the treatment with NSAID available without prescription. According to healthy respondents the most common undesirable actions after taking NSAID are: hepatotoxicity (69.56%), nausea and vomiting (65.21%), diarrhoea (36.23%) and a rash (34.78%). In the tested group the vast majority of the respondents believed that the most common undesired action in this group of drugs is their toxic influence on the structure and function of liver (76.78%), but also nefrotoxicity (50.0%), nausea and vomiting (46.42%) together with gastric/duodenal ulcer disease (39.28%). Every third healthy respondent (33.34%), but also every third respondent with a diagnosed chronic disease (39.28%) was aware of the harmful influence of NSAID on the mucous membrane of the stomach and, as a consequence, development of the gastric ulcer disease (Table 6).

Table 6. Undesirable action of NSAID in options of the questioned people

Control group →	Healthy women	Healthy men	Total (%)
Nausea / vomiting	35	10	45 65.21%
Diarrhoea	19	6	25 36.23%
Cutaneous rash	20	4	24 34.78%
Hepatotoxicity	37	11	48 69.56%
Nefrotoxicity	14	8	22 31.88%
Peptic ulcer disease	17	5	23 33.34%
Agranulocytosis	6	3	9 13.04%
Tested group →	Ill women	Ill men	Total (%)
Nausea / vomiting	18	8	26 46.42%
Diarrhoea	11	7	18 32.14%
Cutaneous rash	11	7	18 32.14%
Hepatotoxicity	25	18	43 76.78%
Nefrotoxicity	18	10	28 50.0%
Peptic ulcer disease	11	11	22 39.28%
Agranulocytosis	7	1	8 14.28%

## DISCUSSION

Health promotion is an important field in modern medicine. Its task is to change a person's attitude towards his health and to direct his actions to taking up more pro-health actions. The reform of the Polish health service conducted in the 90's of the 20th century included health promotion into the duties of the first contact medical doctor (the pamphlet issued in 1992 by the Department of

Science and Education of the Health Ministry titled: 'The Range of Duties of the Family Doctor') (1). In connection with this, the family doctor should teach the patient and influence his health awareness so as to provoke the intended behavioral changes. The main challenges for health promotion are: insufficient physical activity, wrong eating habits, using condiments, and stress. Also the problem of selfhealing is important. The study by Woźniak and his fellow researchers carried out in the 80's of the 20<sup>th</sup> century among Poznań families showed that 98.0% of working families and 97.0% of intellectual families have tried self-treatment of various ailments and in case of 69.2% of working families and 47.2% of intellectual families the self-treatment problem concerned children (2). In the 21<sup>st</sup> century, the problem of self-treatment is still present. An easy access to various groups of drugs, including painkillers, and dissemination of adverts of these drugs in mass media are favourable to the phenomenon of self-treatment. The results of our research showed that only every fifth questioned healthy person consults the choice of a painkiller with his/her doctor. The majority of our society think that the leaflet enclosed with the package and adverts and TV commercials in mass media are the main source of information how to apply NSAID. In our medical practice we will always see the effects and consequences of overusing NSAID accessible without prescriptions unless the situation changes.

#### CONCLUSIONS

1. Patients with the diagnosed chronic disease shows a higher level of consciousness of the risk connected with a long-term application of NSAID accessible without prescriptions.
2. Ill people most often buy NSAID at the chemist's and they get information about their application from their doctors.
3. Healthy people get knowledge and information about the application of NSAID from the leaflet enclosed to the package and from adverts and TV commercials.
4. The role of the family doctor in the education of the society about harmful effects of NSAID accessible without prescriptions should be underlined, because a consultation with a responsible doctor allows to avoid threats connected with the application of that group of drugs.

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#### SUMMARY

The purpose of the study was an attempt to compare the knowledge of patients suffering from the diagnosed chronic disease with that of a group of healthy people about the application of NSAID accessible without prescriptions. In the research carried out by means of a diagnostic survey, 125 people participated (85 women and 38 men) from 16 to 80 years of age. The population was divided into two groups: the control group consisting of healthy people (69 people) and the tested group to which people with the diagnosed chronic disease (56 people) were qualified. The majority of the questioned healthy people admitted to getting information about the application of NSAID from the leaflet enclosed with the package (65.21%) and from adverts and commercials of this group of drugs in mass media (47.82%). These people most often buy the drug at the chemist's (84.0%), newsagent's (62.31%) and at the grocer's or in a supermarket (49.27%). The patients with the diagnosed chronic disease NSAID, on the other hand, buy their drugs, mostly, at the chemist's (94.64%), and as the main source of information on the application of the drug they give a doctor's consultation (71.42%). Research results indicate the need to increase society's awareness of the risk of the occurrence of undesirable actions as a result of the misuse of the drugs accessible without prescription.

#### Znajomość działań niepożądanych niesteroidowych leków przeciwzapalnych (NLPZ) wśród pacjentów z rozpoznaną chorobą przewlekłą i osób zdrowych

Celem pracy była próba porównania wiedzy pacjentów z rozpoznaną chorobą przewlekłą i wiedzy osób zdrowych na temat stosowania niesteroidowych leków przeciwzapalnych (NLPZ) dostępnych bez recepty. W badaniach, przeprowadzonych metodą sondażu diagnostycznego, uczestniczyło 125 osób (85 kobiet, 38 mężczyzn) w wieku od 16 do 80 lat. Badaną populację podzielono na dwie grupy: grupę kontrolną, którą stanowiły osoby zdrowe (69 osób), oraz grupę badaną, do której zakwalifikowano osoby z rozpoznaną chorobą przewlekłą (56 osób). Większość zdrowych ankietowanych informacje na temat stosowania NLPZ czerpie z ulotki dołączonej do opakowania (65,21%) oraz reklam tej grupy leków w mediach (47,82%). Osoby te najczęściej NLPZ kupują w aptece (84,0%), kiosku (62,31%) oraz w sklepie spożywczym lub supermarkecie (49,27%). Natomiast osoby z rozpoznaną chorobą przewlekłą NLPZ kupują przede wszystkim w aptece (94,64%), a jako główne źródło informacji na temat stosowania tej grupy leków podają konsultację z lekarzem (71,42%). Wyniki sondażu wskazują na konieczność poprawy świadomości społeczeństwa co do ryzyka wystąpienia powikłań zdrowotnych wskutek nadużywania NLPZ dostępnych bez recepty.