

Nonadherence to medications among pharmacy clients and their attitude toward medications kept a medicine cabinet at home

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Key words: gender differences; adherence; nonadherence; pharmacy clients; medicine cabinet at home.

Summary. *Objectives.* To assess self-reported adherence among pharmacy clients and to detect if there are any differences in medication use or storage between genders.

Material and methods. The data were collected by means of questionnaires. A standard 45-item questionnaire was developed and used to assess adherence and nonadherence to medications. It was distributed to all pharmacy customers who entered pharmacies chosen by us.

Results. Of the 162 (45 men and 117 women) pharmacy clients participating in the study, 36.42% were considered nonadherent. No significant difference in adherence rates between genders was observed ($P > 0.05$). Women more often named themselves as being responsible for a medicine cabinet at home ($P < 0.001$) and used more sources of information on medications ($P < 0.05$). Women also more frequently checked the expiry date of medications in a medicine cabinet home than men ($P < 0.05$).

Conclusions. The problem of nonadherence to medications exists among pharmacy clients. There is no significant difference in the rate of self-reported adherence between male and female pharmacy clients. Women are the ones named as responsible for a medicine cabinet at home. They also are important health decision makers. Women are more interested in information on medicines and their use; therefore, this demand should be satisfied.

Introduction

The consumption of medications has been dramatically increasing during the last two decades (1). Global sales of medicines in 2004 amounted to about 550 million USD, and 10% to 40% of health budget are spent on medicines (2). However, almost half of all medications are not used in a proper way (3, 4). Poor adherence to medication regimens accounts for substantial worsening of the disease and increases health care costs (5).

Research on nonadherence has been carried out for almost three decades (6), but scientists are still debating how we should call this phenomenon (4, 6, 7). The words *compliance*, *adherence*, and *concordance* have been proposed. Compliance is a word with negative connotations. It suggests yielding, complaisance, and submission. Compliant patients “submit” to the prescriptions of doctors and take their medicine, or follow their advice, a phrase that also means punishment (6). Concordance is based on a principle that patients receive the information that they want and need about their medicines and can, therefore, make informed decisions. Central to concordance is

an acceptance that informed patients may decide they do not wish to take the treatment (7). The term alternative to compliance is “adherence.” It is growing in popularity and preferred by many health care providers (4, 6). According to some authors, this term incorporates the broader notions of concordance, cooperation, and partnership (6), and we will use this term in further discussions.

Health outcomes in clinical trials are much more better than in clinical practice. This could be related to adherence, because the rates of adherence in clinical trials are higher than those found in clinical practice. In general, more compliant patients achieve better treatment outcomes than those who do not comply. Therefore, it is very important to know the risk factors of nonadherence to medications in order to prevent them (8).

Several studies conducted in Lithuania (9, 10) and abroad (11, 12) reported that women were more likely than men to use medications. This could be explained in part by the fact that women more frequently use health care services related to reproductive health such as contraception or antenatal care (13). Meanwhile,

greater use of medications may be a signal for increased health risk: it is well known that the use of multiple medications entails health risks such as potential interactions and even drug-related hospitalizations (14, 15). A Dutch study has shown that the gender difference among benzodiazepine users seems to be due to general practitioners being less stringent when prescribing these drugs for women (16).

The aim of our study was to analyze if a gender is associated with the risk of nonadherence to medications and to evaluate self-reported adherence among pharmacy clients.

Material and methods

Although many methods of measuring nonadherence to medications (17) exist, one of the oldest and still very popular ways is by interview or questionnaire (18). The advantages of this method of measurement over others include its simplicity, speed, and viability to use. The disadvantages include both the reliance on recall and social desirability bias, with a tendency to overestimate adherence (19, 20).

A total of 162 patients were recruited at three pharmacies chosen by us. The selected pharmacies were chosen for three reasons. Firstly, location and the percentage of prescription medications: all pharmacies chosen by us were located not far from the physician's office (less than 200 m away), and annual sales of the prescription medications were not less than 50% of the total sales. Secondly, size and layout: it was important for the pharmacies to have a relatively secluded area where pharmacy clients could be provided with information about the study and could fill in the questionnaires. The third criterion was the agreement of the head of the pharmacy to participate in the study.

The team of five students from the Faculty of Pharmacy asked each customer to fill in the questionnaire. The inclusion criterion was the use of any medication within this year. The researchers were not wearing white coats and so they did not look like the pharmacy staff. This was to ensure that pharmacy clients would not be afraid that their responses will influence the quality of consultations with pharmacy staff when buying a medication in the future. It took 15–30 min for one patient to fill in the questionnaire. All older respondents were offered help to complete the questionnaire. Eighty-eight percent of the pharmacy clients who visited the pharmacy on investigation day matched the inclusion criteria and agreed to take part in the study.

A 45-item structured multiple-choice questionnaire was used as a tool for assessment.

The questionnaire was divided into different sections. Every section represented different blocs of information. The questions were grouped into subgroups:

- Patient's characteristics (age, gender, education);
- Facts about medication use (how often they use the medication, if they follow instructions, etc.);
- Sources of medicine information (what information sources they use for obtaining information on medications);
- Home pharmacy (medicine cabinet at home) characteristics (who is responsible for a medicine cabinet at home and if they take care about the expired medications, read instructions, know indications of all the medications at home);

The validity and reliability of this questionnaire was examined before its use. Face validity was tested using the answers and feedback interviews of 17 volunteers, which helped us to find the best formulations for the questions. Their answers were not included in the analysis of results.

SPSS version 11.0 for Windows was used to store the entire data and to analyze the quantitative data. Standard deviations (SD) were determined. An independent *t* test was used to test differences in mean scores.

Results

A total of 162 pharmacy clients were recruited for the interview. There were 117 (72.2%) women and 45 (27.8%) men participating in the study. The mean age was 47.81 years (SD, 18.89; range, 18–85; median, 45). The mean age of female participants was 47.21 years (SD, 19.00; range, 18–83; median, 46). The mean age of male participants was 49.4 years (SD, 18.73, range, 18–85, median, 45). About 60% of the participants were younger than 55 years. The percentages of female and male participants older than 55 years were 34.2% and 40%, respectively. About 35% of the respondents (36% of females and 33% of males) reported lower than secondary education; most of them were elderly. Every tenth participant had university education (11% of females and 7% of males); 32% of the participants were retired.

The number of different medications taken each day varied from 0 to 5. Out of the 162 respondents, 82 (50.62%) reported they were everyday medication users (take at least one medication per day), and 80 (49.38%) considered themselves as occasional users ("I take medications only when get sick. Usually I don not use them every day").

More than half (52.13%, 61 out of 117) of female

respondents and 46.66% (21 of 45) of male respondent use medications everyday.

The mean number of medications taken by everyday users was 1.39 (SD, 0.964; range, 0–5) per person; the corresponding numbers for females and males were 1.41 (SD, 1.01; range, 0–5) and 1.33 (SD, 0.83; range, 0–4), respectively.

The results of the interviews revealed that our participants had different levels of adherence: from “I do not care” or “I try to take medication shorter than it is recommended, I do not want to poison myself” to “It is very important to follow instructions,” “I try to take medication exactly as doctor prescribed.” In order to group all the answers, we asked participants to rate their own adherence. The proposed answers and criteria for the evaluation of adherence are shown in Table 1. The respondents had to evaluate their adherence by choosing one of those answers.

The results of the evaluation of nonadherence to medications and differences between women’s and men’s answers are presented in Table 2. The overall percentage of partly and completely nonadherent respondents was 36.4%. This means that only 2 of 3 respondents described themselves as always adherent. There was no significant difference in the overall adherence rate between males and females.

The main reasons of nonadherence were “forgetfulness,” “complexity of daily regimen,” “distrust of treatment,” “money.” The most common explanation was as follows: “I use medications exactly according

to the instructions only when I feel really sick.” When the respondents felt themselves better, they were more likely to refuse taking medication: “I do not take medications when it is not needed” or “I do not want to poison myself,” etc. Twenty-two out of the 59 respondents (37.28%) could not provide a reason for their nonadherence.

“Physician,” “pharmacist,” “TV,” “patient’s information leaflet,” “drug promotion leaflet,” “press,” “books,” “internet” were pointed out as sources of information on medications. The mean number of sources used for obtaining information on medicines was 2.78 for male respondents and 3.52 for female respondents ($P<0.05$).

Women more often indicated themselves as responsible for a medicine cabinet at home ($P<0.001$) (Table 3). Males more often stated that the one who is responsible for home medication cabinet is a partner ($P<0.01$). Even when the person who was responsible for a medicine cabinet at home was not the respondent or his/her partner, it was usually the “mother” or “daughter.” Only one woman named her son as the person who was responsible for a medicine cabinet at home. Men more often than women reported that nobody was responsible for a medicine cabinet at home ($P<0.01$). There was no significant gender difference in knowledge on indications of all medications in a medicine cabinet at home. However, men were more likely to report taking less care about expiry date of the medication.

Table 1. Evaluation of adherence

Category	Feelings about instruction of taking medication	Evaluation
0	I always try to follow the instructions	Adherent
1	Sometimes I follow the instructions, sometimes not	Partial nonadherence
2	I do not care about the instructions	Complete nonadherence

Table 2. Adherence to medication

Item	Sample (N=162) n (%)	Gender		z (P)
		male (N=45) n (%)	female (N=117) n (%)	
Adherent	103 (63.58)	29 (64.44)	74 (63.25)	0.14 (NS)
Nonadherent	59 (36.42)	16 (35.56)	43 (36.75)	0.14 (NS)
Partial nonadherence	52 (32.10)	12 (26.67)	40 (34.19)	0.95 (NS)
Complete nonadherence	7 (4.32)	4 (8.89)	3 (2.56)	1.41 (NS)

NS, not significant.

Table 3. Home medication cabinet

Item	Gender		z (P)
	male (n=45) n (%)	female (n=117) n (%)	
Who is responsible for a medicine cabinet at home?			
Respondent	9 (20.00)	78 (66.67)	6.32 (<0.001)
Other family member			
partner	13 (28.89)	7 (5.98)	3.23 (<0.01)
mother, child	4 (8.89)	13 (11.11)	0.43 (NS)
Nobody	19 (42.22)	19 (16.24)	3.20 (<0.01)
Do you know the indications of all medicines you have?			
Yes	31 (68.89)	92 (78.63)	1.24 (NS)
Mostly	3 (6.67)	11 (9.40)	0.59 (NS)
No	11 (24.44)	14 (11.97)	1.76 (NS)
Do you check the expiry date of your medication periodically?			
Yes	30 (66.67)	97 (82.91)	2.07 (<0.05)
No	15 (33.33)	20 (17.09)	2.07 (<0.05)

Discussion

Almost 40% of the pharmacy clients were considered nonadherent in our study. Our results are compatible with the results of earlier studies (3, 8, 21, 22). In a Swedish study with pharmacy clients, the adherence rate was 54% (21), in a Bulgarian (22) study, the adherence rate among pharmacy clients was 60%, and in our study, the self-reported adherence was 63.58%. This means that at least one out of three patients tends not to follow instructions given by their health care specialist. The study proves that the problem exists and calls for action.

Earlier, some scientists assumed that women tend to be more compliant than men (23), but our study did not reveal any gender-related differences in adherence to medications, and we would rather agree with other authors (13, 24) that the differences in ill-health between men and women is not as great as has often been supposed. Gender inequalities are compounded further by other forms of structural inequalities, such as ethnicity, employment, and education (13).

In our study, the only one greater difference between males and females was documented comparing responsibility for a medicine cabinet at home and obtaining information about medications. More than half (67%) of female respondents in our study named themselves as responsible for a medicine cabinet at home. If we add 11% of the respondents who indicated that other family member was responsible for a medicine cabinet at home, usually a mother or a daughter, it is possible to assume that in 78% of households,

females were responsible for a medicine cabinet at home. The obtained data confirm the conclusions of other authors that women tend to take more care about their own health and health of other family members such as children, parents, and their partners (13).

Our study has shown that women use more sources of information on medicines than men. The results of Estonian study (25) were the same: women were more interested in the administration, indications, side effects, interactions, and price than men. The knowledge level of male respondents was lower, and they were less willing to seek out information.

Petkova (22) has concluded that one of the main factors that have an influence on adherence is the level of information obtained from the leaflets, physician, or pharmacist. Different attitudes of patients toward these sources of information show possible areas, which may need to be improved in order to obtain a better level of adherence and hence a better treatment. All the ways improving adherence to medications should be explored. According to the Lithuanian study (26), one of the easiest ways to get pharmaceutical information is to obtain it from a pharmacist.

Our study has several limitations. Firstly, we did not use earlier validated scales of measuring self-reported adherence such as Moriscy et al. (27). The second limitation is relatively small sample of pharmacies included in our study. We attempted to include more pharmacies, but not all of them agreed to participate in the study. The third limitation was as follows: pharmacy clients were asked to describe their medi-

cation regime by themselves and we did not check those statements via medical database, so they could overestimate the number of medication or reduce it. This problem also is relevant for most of community pharmacists when they consult their patients if they have not access to such databases.

Future research could be carried out on accessibility and reliability of the medical information sources. We also assume that reserves of medications at home especially remnants of prescription medications could be a true indicator of actual nonadherence to medications.

Conclusions

The problem of nonadherence to medications exists among pharmacy patients. There is no significant difference in adherence rates between male and female pharmacy clients. However, women represent a larger percentage of pharmacy clients than men, and in many cases, women are responsible for a medicine cabinet at home and for making important health-related decisions. Women are more interested in pharmaceutical information. It is recommended that health care specialists would consider these aspects of medication use and provide more information at all levels.

Vaistinės pacientų nesilaikymas nurodymų vartojant vaistus ir jų požiūris į namų vaistinėlėje esančius vaistus

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Raktažodžiai: lyčių skirtumai, vaistų vartojimo nurodymų laikymasis, vaistinės pacientai, namų vaistinėlė.

Santrauka. *Tyrimo tikslas.* Įvertinti vaistų vartojimo nurodymų laikymąsi tarp vaistinės pacientų. Išanalizuoti atsakingo požiūrio į vaistų vartojimo ir jų saugojimo namie skirtumus tarp lyčių.

Metodai. Duomenys buvo surinkti apklausos būdu. Tam sukurtas 45 klausimų klausimynas ir atlikta vaistinės pacientų apklausa. Apklausti visi tyrimo metu į pasirinktas vaistines atėję pacientai.

Rezultatai. Apklausti 162 vaistinės pacientai, 45 vyrai ir 117 moterų. Nustatytas vaistų vartojimo nurodymų nesilaikymo dažnis tarp tiriamųjų buvo 36,42 proc. Vaistų vartojimo nurodymų nesilaikymo dažnis tarp vyrų ir moterų buvo panašus ($p>0,05$), tačiau moterys skirtingai nei vyrai daug dažniau save laiko atsakingomis už namų vaistinėlę ($p<0,001$) ir daugiau naudoja informacijos šaltinių apie vaistus ($p<0,05$). Jos dažniau teigia tikrinančios namų vaistinėlėje esančių vaistų galiojimo terminus ($p<0,05$).

Išvados. Vaistų vartojimo nurodymų nesilaikymo problema yra gabi tarp vaistinės pacientų. Vienodai dažnai nurodymų teigia nesilaikantys tiek vyrai, tiek moterys. Tačiau moterys dažniau atsakingos už namų vaistinėlę ir turi įtakos kitų šeimos narių požiūriui į vaistus. Moterys teigia labiau besidominčios informacija apie vaistus ir jų vartojimą, todėl ši poreikį itin aktualu patenkinti.

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