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ORIGINAL PAPER

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# Characteristics of Elderly Frequent Attendees in Slovene Family Medicine Practices - a Cross-sectional Study

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## ABSTRACT

**Introduction:** Frequent attendance in family medicine practices is associated with elderly patients and those with chronic diseases. Longstanding frequent attendees have more social and psychiatric problems, medically unexplained conditions, and chronic diseases, and are prescribed more psychotropic drugs and analgesics. **Aim:** To fill the lack of data on the factors associated with frequent attendance at family medicine practices by the elderly. **Methods:** Forty family physicians (FPs) participated in this cross-sectional study in 2017 and randomly recruited up to 20 of their patients; 624 patients were recruited. From the patients' health records, the FPs collected demographic data, lifestyle factors, all the patients' diagnoses, all the drugs prescribed in the previous 12 months, multi-morbidity (CIRS-G index), the quality of life index (EQ-5D) and the number of visits to the family medicine practice in the previous 12 months. The Self-Rating Depression Scale was administered to the patients. Statistical analysis was carried out using the IBM SPSS 20.0 package, with appropriate non-parametric tests (Mann-Whitney U test, chi-square test) to check significant differences between groups of patients. Multivariate modelling was carried out to evaluate the associations between the number of visits to the FP and independent variables. **Results:** The number of prescribed drugs ( $p=0.026$ ), haematological problems ( $p=0.005$ ) and genitourinary problems ( $p=0.001$ ) were associated with frequent attendance. Patients with borderline depression were approximately three times more likely to be frequent attendees than non-depressed patients. **Conclusion:** Polypharmacy, haematological and genitourinary problems are associated with frequent attendance in elderly patients. Further longitudinal studies are required

to validate our findings.

**Keywords:** Elderly, frequent attendees, family medicine, polypharmacy.

## 1. INTRODUCTION

Frequent attendees in family medicine practices represent a relatively high proportion of all visits, creating many onward referrals and drug prescriptions. Moreover, data show that the top 10<sup>th</sup> percentile of family medicine practice attendees make 30-50% of all visits; half of the frequent attendees have a physical illness, but more than half of the frequent attendees have psychological distress, and one-third of frequent attendees have multi-morbid conditions (1, 2). The aetiology of frequent attendance is complex, unclear and even contradictory indifferent studies (3-8). In any specific healthcare system, patient characteristics, physician characteristics, and interpersonal patient-physician dynamics can all influence frequent attendance (9). A recent study in the Netherlands found no strong evidence of effects of the FP's characteristics on frequent attendance (8). On the other hand, the characteristics of the healthcare system, primary care prevention and cohesion between primary, secondary and tertiary healthcare, and wider cultural and social factors in a society have been shown to have an impact on frequent attendance (10).

Frequent attendance in family medicine practices has been shown to be associated with social factors (unemployment, divorce, low education and social support), psychological distress (11) and physical health (1, 12), life-style and age (2), e.g. a large German retrospective study showed that frequent attendance was only slightly asso-

ciated with gender, but strongly with age (13). In Slovenia, life expectancy at birth has been soaring in the past few decades, particularly between 2004 and 2014 (14); elderly frequent attendees may become an even greater problem in the future.

Frequent attendees use primary care services more often than patients with chronic diseases, and have longer and more thorough visits and more house visits than other patients (13). They appear to be over-serviced but under-served, with underlying problems not addressed by a medical approach (5). Previous research also shows considerable costs associated with frequent attendance in primary as well as in specialist care, which may not be simply explained by the excess morbidity these patients have (11, 15). For this reason we cannot expect that effective treatment of multi-morbidity, even if it were optimally available, could lower high attend an cerates of frequent attendees in family medicine practices.

Most of the research on frequent attendees comes from countries with electronic health records (the Netherlands, the UK, Scandinavia, the USA) (16), defining frequent attendance proportionally as an age and gender-adjusted attendance rate and selecting exceptionally high users within each age and gender group. However, there is a lack of data on which factors contribute to frequent attendance in elderly patients (17). In general, severe ill health and the need for treatment serve as the main drivers of frequent attendance in older adults.

In Slovenia, collaboration between IT specialists and healthcare providers to adopt an IT system to fully support patient management has been shown to be very important (18), although electronic health records have not yet been introduced in primary care. Previous research shows that frequent attendees (the top 25%) had a lower education level, chronic health problems, and a higher rate of use of other healthcare services (19). A longitudinal study showed frequent attendance in the following two years was associated with low physical health at baseline, but not with depression, anxiety or abuse of alcohol at baseline (7).

## 2. AIM

This study aimed to explore the factors associated with frequent attendance of elderly people in family medicine practices, and was the first one in the field focusing exclusively on elderly people.

## 3. METHODS

This research was part of the project "The effects of a web application and medical monitoring on the quality of medication, adverse drug events and adherence in the elderly living at home" (Slovenian Research Agency code number L3-6805). Beginning in August 2014, researchers at the Department of Family Medicine of the Faculty of Medicine of Ljubljana, the Department of Family Medicine of the Faculty of Medicine of Maribor, and the Institute for the Development of Family Medicine made a randomized, controlled, longitudinal study to evaluate whether it is possible to improve the quality of prescribing drugs to elderly people living in their homes by regular checks of concordance of drug prescribing with STOPP/START cri-

teria. The protocol of the study has already been described elsewhere (20).

### Participants and Procedures

Forty family physicians (FPs) participated in a pragmatic randomized controlled trial. The FP practices were selected from urban, suburban and rural areas to ensure an appropriate socio-economic and ethnic diversity; however, the FP practices and FPs were selected pragmatically, not systematically. The physicians participated on a voluntary basis, according to their interest in chronic diseases and multi-morbidity in the elderly. From the patient register, the physicians randomly selected 20 patients older than 65 years who regularly received at least one drug, and invited them to participate in the study. Patients with dementia who were unable to answer the questionnaire, and those with a terminal illness, e.g. advanced cancer or the terminal phase of chronic obstructive pulmonary disease, were excluded, while bedridden patients were visited by their physicians at home.

Of the 639 patients invited to participate in the study, 15 declined, so 624 patients were recruited in this cross-sectional study. We recorded the age and gender of the patients who declined to participate in the study, but not the reasons for their non-participation. There were no significant differences in age and gender between the participating patients and the patients who declined.

### Instruments

The FPs collected demographic data about the patients (age, gender, years of education, living alone or not); life-style factors (smoking, alcohol use, physical activity); all the patient's diagnoses; all their prescribed drugs in the previous 12 months; and the number of visits to the FP in the previous 12 months (recorded in categories: 1 or less; 2-3; 4-5; 6-10; and more than 10 visits) from the patient's health records. They also checked multi-morbidity (by the CIRS-G index) (21, 22), depression (by the Zung Self-Rating Depression Scale) (23) and the Quality of Life Index (EQ-5D) (24).

### Data Analysis

We analyzed the data from all 624 patients. IBM SPSS 20.0 was used for the statistical analysis. We used appropriate non-parametric tests (Mann-Whitney U test, chi-square test) to check significant differences between groups of patients. We set the confidence level at  $p < 0.05$ .

Multivariate modelling was carried out to evaluate the associations between number of visits to the FP in the last 12 months ( $1 = \text{more than 10 visits}$ ,  $0 = 10 \text{ visits or less}$ ) and the independent variables, i.e. gender ( $1 = \text{man}$ ,  $2 = \text{woman}$ ), age (*number of years*), education ( $1 = \text{primary school or less}$ ,  $2 = \text{vocational or high school}$ ,  $3 = \text{college or more}$ ), number of prescribed drugs, number of diagnoses, mobility and usual activities ( $1 = \text{problems}$ ,  $0 = \text{no problems}$ ), EQ VAS score (0 to 100) and haematological, upper gastrointestinal, genitourinary neurological, or psychiatric/behavioral problems ( $1 = \text{no problems}$ ,  $2 = \text{mild}$ ,  $3 = \text{moderate/severe}$ ), depression ( $1 = \text{no}$ ,  $2 = \text{on the border of depression}$ ;  $3 = \text{present}$ ), together with an average illness rating score (0 to 4).

An Omnibus test of coefficients showed these variables differentiated patients well according to frequency of attending the practice, and had a significant impact ( $p < 0.05$ ).

	Frequent attendees Number/mean (%/ ± SD)	Non-frequent attend- ees Number/mean (%/ ± SD)	Chi-square/ U	df	p
Age	76.00 ± 6.05	74.73 ± 6.06	19952.5		0.049
Number of prescribed drugs	6.89 ± 3.249	5.30 ± 2.662	15893		0.000
Number of diagnoses	5.49 ± 3.249	4.70 ± 2.118	19008		0.008
EQ-5D	0.67975 ± 0.17650	0.70024 ± 0.17926	16653.5		0.681
EQ-5D Problems with mobility	56 (21.4%)	206 (78.6%)	5.646	1	0.017
EQ-5D Problems with self-care	9 (20.5%)	35 (79.5%)	0.361	1	0.548
EQ-5D Problems with usual activities	44 (24%)	139 (76.0%)	9.028	1	0.003
EQ-5D Problems with pain/discomfort	73 (19.3%)	306 (80.7%)	3.509	1	0.061
EQ-5D Problems with anxiety/depression	40 (21.1%)	150 (78.9%)	2.468	1	0.116
EQ VAS score	53.24 ± 16.619	61.31 ± 18.312	15334		0.000
CIRS-G score	7.74 ± 4.521	5.94 ± 3.837	17413		0.000
Average number of medical problems	4.71 ± 2.524	3.85 ± 2.204	18318.5		0.002
Average illness rating score	1.5938 ± 0.5623	1.4350 ± 0.6047	18490		0.003
Number of medical problems with a rating of 3	0.52 ± 0.828	0.30 ± 0.640	19793		0.006
Number of medical problems with a rating of 4	0.10 ± 0.366	0.06 ± 0.299	21996		0.135

Table 1. Characteristics of Frequent and Non-frequent Attendees

	No problems Number/mean (%/SD)	Mild problems Number/mean (%/SD)	Moderate and severe problems Number/mean (%/SD)	Chi- square/U	df	p
Haematological problems	83 (15.7%)	3 (30.8%)	7 (77.8%)	27.167	2	0.000
Upper gastrointestinal problems	63 (15.8%)	13 (13.1%)	22 (33.8%)	14.261	2	0.001
Genitourinary problems	55 (14.7%)	18 (18.9%)	25 (26.0%)	6.983	2	0.030
Neurological problems	74 (15.5%)	15 (28.8%)	9 (25.7%)	7.613	2	0.022
Psychiatric/behavioural problems	65 (15.0%)	23 (25.3%)	10 (24.4%)	6.993	2	0.030
Zung depression scale (total score)	43.22 ± 8.708	3651		0.000		

Table 2. Health Problems in Frequent Attendees in relation to Self-rated Depression

The Hosmer-Lemeshow test confirmed that differences between the actual and generated data in the model were small and not significant ( $p > 0.05$ ), with the data fitting well into the regression model. Aside from gender, age, education and variables, which had statistical significance in bivariate analysis, only the average illness rating score of CIRS-G was included to avoid multicollinearity.

#### 4. RESULTS

Of the 624 patients included in the study, 266 (42.6%) were men and 358 (57.4%) were women. The average age of the patients was 75.2 years ± 6.2 years. The patients' education was primary school or less ( $n = 271$ , 47.6%), vocational or high school ( $n = 209$ , 36.7%) or college ( $n = 89$ , 15.6%). Forty patients were smokers (7.0%), and another 160 patients (28.1%) had smoked in the past but no longer smoked in 2015. Other relevant data included: 451 patients (79.3%) reported regular physical activity; 269 patients (44.4%) drank alcohol; and 115 (20.1%) lived alone, 310 (54.3%) with an intimate partner and 146 (25.6%) with others.

Concerning how long the patients' had been with their FP, 69 (12.2%) had been registered with the same FP for three years or less, 103 (18.2%) for three to ten years, and the remainder ( $n = 395$ , 69.7%) for more than ten years. In

the previous 12 months, 98 (17.4%) patients had visited their FP more than ten times, while 23 (4.1%) patients had visited their physician once or less, 124 (22.0%) patients two or three times, 172 (30.5%) patients four or five times and 147 (26.1%) patients six to ten times. We collected data on patient visits from a total of 564 patients, and defined frequent attendees as those who had visited their FP more than ten times in the previous 12 months. Their characteristics, which significantly differ from other patients, are presented in Table 1.

After the multi-morbidity assessment, three groups of patients were formed: patients with no problems, patients with mild problems, and patients with moderate or severe problems. The characteristics of the patients with moderate and severe health problems significantly associated with frequent attendance are presented in Table 2. Self-rated depression, i.e. more than 49 points on the Zung scale, was identified in 37.5% of patients, while 30.1% were categorized as on the borders of depression (40-49 points).

#### The Probability of Frequent Attendance

With the multivariate analysis, we wanted to evaluate the probability of frequent attendance. The Nagelkerke R (2) showed that the model explained 37.5% of the variability for frequent attendance. The regression parameters of the

	b	se	Wald	df	p	exp(b)	95 % confidence interval	
							Lower limit	Upper limit
Constant	-7.580	2.877	6.942	1	0.008	0.001	-	-
Gender (female is reference category)	0.761	0.446	2.912	1	0.088	2.141	0.893	5.135
Age	0.049	0.033	2.153	1	0.142	1.050	0.984	1.121
Faculty education or higher (reference category)			3.885	2	0.143			
Primary school or lower	0.609	0.461	1.747	1	0.186	1.839	0.745	4.537
Secondary or vocational school	-0.614	0.674	0.830	1	0.362	0.541	0.144	2.027
Number of prescribed drugs			4.963	1	0.026	1.253	1.028	1.529
Number of diagnoses			2.412	1	0.120	0.810	0.621	1.057
Mobility (no problems is reference category)			0.001	1	0.974	0.985	0.398	2.437
Usual activities (no problems is reference category)			0.133	1	0.715	1.178	0.488	2.843
EQ VAS score			0.623	1	0.430	0.989	0.963	1.016
Medical problems (no problems is reference category)								
Haematological problems			8.054	1	0.005	4.045	1.541	10.619
Upper gastrointestinal problems			1.518	1	0.218	1.382	0.826	2.311
Genitourinary problems			10.432	1	0.001	2.276	1.382	3.750
Neurological problems			2.460	1	0.117	1.592	0.890	2.846
Psychiatric/behavioural problems			0.339	1	0.561	1.193	0.658	2.163
Average illness rating score			0.450	1	0.502	1.279	0.624	2.622
Non-depressed (reference category)			5.141	2	0.077			
Borderline depression			5.117	1	0.024	2.941	1.155	7.487
Depressed			1.892	1	0.169	2.524	0.675	9.436

Table 3. Estimated Regression Model for Frequent Attendance. Legend: b: regression coefficient; exp(b): odds ratio; se: standard error; Wald: Wald test statistics; df: degrees of freedom; p: level of significance

model are presented in Table 3.

There were three variables with significant association: the number of prescribed drugs (p=0.026), haematological problems (p=0.005) and genitourinary problems (p=0.001). Estimated regression coefficients show (with the other characteristics of the patients unchanged) that with each additional prescription, the likelihood of frequent attendance increases 1.253 times; in the case of haematological problems, the likelihood of frequent attendance increases 4.105 times, and in genitourinary problems the likelihood of frequent attendance increases 2.276 times. Besides these three variables, the presence of depression also showed significant association. Patients who were on the borders of depression were 2.941 times more likely to be frequent attendees than non-depressed patients.

### 5. DISCUSSION

The main finding of our study is that the number of prescribed drugs, but not the number of diagnoses, was found to be associated with frequent attendance in elderly patients (Table 3). Each additional prescription elevated the likelihood of frequent attendance 1.253 times. Of almost 17 million prescriptions written in Slovenia in 2011, more than 9 million were prescribed to people over 60 (with just over 20% of the total population receiving 54% of all the

prescriptions issued), and the value of these drugs reached EUR 262.5 million. It was found that 20% of people over 70 years of age were being treated with five or more drugs at once (25). The number of diagnoses and the number of prescribed drugs were both highly significantly associated with frequent attendance in univariate analysis, but in multivariate analysis only the effect of the number of prescribed drugs remained. This may be of the utmost important for practising FPs, since polypharmacy has been shown to be associated with adverse drug events (ADE) (drug-drug interactions, adverse drug effects, frequency and length of hospitalizations, re-admissions, and higher mortality), and it has been shown to be by itself a risk factor for ADE and geriatric syndromes which affect the functional status of elderly people (26, 27).

Our study also showed that haematological problems and genitourinary problems were associated with frequent attendance in elderly patients (Table 3). The number of patients with haematological problems was low. There were only 26 patients with mild haematological problems, but 8 of them were frequent attendees; and 9 patients with moderate and severe haematological problems, but 7 of them were frequent attendees. However, there were more patients with genitourinary problems: 95 with mild problems, of which 18 patients (18.9%) were frequent attendees, and 96

with moderate and severe problems, of which 25 patients (26%) were frequent attendees.

The main genitourinary problem in elderly patients is urinary incontinence. The current delivery of the continence care service does not adequately address this health and social care burden, and in several European Union countries funding for this area of health is far from adequate (28). This is particularly true in case identification and the provision of initial treatments, which could perhaps be a result of the relative lack of continence-related content in higher education training across the major healthcare professional disciplines (29). In Slovenia there are gynecologists at the primary care level; every woman has her own personal gynecologist. Family medicine physicians do not care comprehensively for all genitourinary problems in women at the primary care level, but share it with primary care gynecologists, so it can only be speculated that better management of urinary incontinence and other genitourinary problems is a real need of the elderly population, and could lower frequent attendance at family medicine practices.

In this study, only the group of patients who were on the borders of depression were significantly associated with frequent attendance (Table 3), while self-rated depression was not a significant factor in the multivariate analysis. This is concordant with results of another yet prospective study in Slovenia, where associations between depression and frequent attendance were also not found (7). In 2009, Klemenc-Ketiš, Kersnik and Tratnik examined the characteristics of adult family practice patients with chronic diseases in Slovenia, and reported significantly higher rates of depression and anxiety in patients with chronic somatic disease or chronic pain. The authors warned family doctors to actively seek out and treat psychiatric comorbidity, including in the population of patients with chronic somatic diseases (30). Recently Pivec and coworkers reported that the independent predictive factors for the presence of any health issues were female gender and chronic disease, while the most heavily burdened in Slovenia were female, elderly, chronic patients and people with lower socioeconomic status (31). On the other hand, our study showed the number of prescribed drugs to be a more informative factor for frequent attendance than the presence of chronic diseases, mental disorders and/or lower socioeconomic status (Table 3).

#### Strengths and Weaknesses of the Study

Prescribing drugs to the elderly is poorly supported by evidence, since they are rarely included in clinical trials, and in research intended specifically for the elderly, the researchers usually study non-typical healthy subjects instead of the more numerous fragile elderly with several illnesses (32). In many cases, comorbidity is a common exclusion criterion, and multi-morbidity is also poorly researched (33). The main weaknesses of our study are its cross-sectional design and non-standard definition of frequent attendance. Usually the top 10<sup>th</sup> percentile of attendees are described as frequent attendees. In our study we did not collect the actual number of visits in the previous 12 months, but used categories (1 or less, 2-3, 4-5, 6-10 and more than 10 visits).

Furthermore, the authors must admit to a missing data problem in the execution of this study. We collected data on the number of visits in the previous 12 months from only 564 patients. We collected data from the EQ-5D from 535 patients, and data of depression from only 288 patients. Only 254 patients were included in the multivariate analysis. Due to this missing data, the presented findings should be taken into consideration with restraint. However, in the next data collection we will be able to overcome this hurdle and test the stability of the results.

On the other hand, this is the very first study focused on the quality of life and healthcare of the elderly in Slovenia. From this standpoint, the results should be valued preliminary yet of great value for family medicine and elderly family medicine clinic attendees.

## 6. CONCLUSION

Our study shows that polypharmacy, haematological and genitourinary problems are associated with frequent attendance in elderly patients. It suggests that more appropriate drug prescribing in family medicine practices in Slovenia could bring about important changes in the quality of care for elderly patients. Further longitudinal studies are required to validate our findings.

**List of Abbreviations:** CIRS-G: Cumulative illness rating scale for Geriatrics, EQ-5D: EuroQol 5 dimensions, EQ VAS: EuroQol visual analogue scale, FP: Family physician, ADE: Adverse drug events

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