Table 1. Characteristics of the GPs and their consultations

Sociodemographic characteristics	
Age (years) (median [IQR])	47.4 (±7.1)
Gender	
Males	102 (87.9)
Females	14 (12.1)
Practice related characteristics	
Billing above the amount set by the government	8 (7.14)
Group practice	61 (54.5)
Practice location	
Urban	64 (54.7)
Rural	17 (14.5)
Semi-Rural	36 (30.8)
Time since qualification (years) (median [IQR])	18 [13-23]
Duration of participation in the study (years) (median [IQR])	6.32 [3.9-10.9]
Consultation related characteristics	
Annual number of consultations per GP (median [IQR])	
- Total	3977.1 [2913.6-4843.1]
- For patients aged ≥65	668.9 [377.1-1010.4]
- Per patient	7.0 [4.5-9.3]
- Per patient aged ≥65	12.6 [9.2 – 18.7]
"Consultation results" in patients aged 65 and over, per consultation and per GP (median [IQR])	
- Psychiatric illnesses	0.21 [0.14-0.27]
- Chronic diseases	2.05 [1.53-2.64]
- Number of drug prescriptions other than BZD/ZDs	4.16 [3.54-4.74]

GP, general practitioner, IQR: interquartile range. BZD/ZDs: benzodiazepine and Z-drugs

Qualitative variables are described as numbers (%) and quantitative variables as median [interquartile range (IQR)]

TABLE2. Univariate analysis: GP predictors of overprescription of BZD/ZDs among older patients (n=117)

	Below-median prescribers (N=58)	Above-median prescribers (N=59)	P value*	Unadjusted OR** [95%CI]
Age (years) (median [IQR])	46 [43-50] 46.7 (±7.3)	48 [44-53] 48.1 (±6.9)	0.29	
Age in classes				
< 40	8 (14.3%)	6 (10.3%)		1 (ref)
40-49	32 (57.1%)	25 (43.1%)	0.16	1.04 [0.32 – 3.39]
50-60	14 (25.0%)	26 (44.8%)		2.48 [0.72 – 8.57]
>60	2 (3.6%)	1 (1.7%)		0.67 [0.05-9.19]
Gender				
Male	47 (82.5%)	55 (93.2%)	0.08	1 (ref)
Female	10 (17.5%)	4 (6.8%)		0.34 [0.10-1.16]
Billing above the standard fee	3 (5.4%)	5 (8.8%)	0.72	
Group practice	31 (55.4%)	30 (53.6%)	0.86	
Practice location				
Urban	31 (53.5%)	33 (55.9%)		
Rural	7 (12.1%)	10 (17.0%)	0.60	
Semirural	20 (34.5%)	16 (27.1%)		
Time since qualification (years) (median [IQR])	16,5 [11-21]	21 [14-25]	0.19	1.03 [0.98-1.08]
Duration of participation in the study < 6.3 years (median)	24 (41.4%)	35 (59.3%)	0.05	2.08 [0.99-4.35]
Annual total number of consultations per GP (median [IQR])	3982.50 [2913.6-4666.7]	3977.06 [2866.8-5049.6]	0.84	
Annual total number of consultations with patients aged ≥65 per GP (median [IQR])	603.40 [330.06-978.94]	755.60 [452.26-1074.69]	0.13	1.00 [1.00-1.00]
Annual number of consultations per patient (median [IQR])	6.56 [4.36-9.38]	7.55 [4.85-9.06]	0.40	
Annual number of consultations per patient aged ≥65 (median [IQR])	12.29 [7.77-18.65]	13.14 [9.53-19.56]	0.45	
Number of psychiatric consultation results per consultation for patients aged ≥65 and per GP (median [IQR])	0.17 [0.12-0.24]	0.25 [0.17-0.30]	<0.001	19.0 [0.55-656.83]
Number of chronic disease consultation results per consultation for patients aged ≥65 and per GP (median [IQR])	1.88 [1.42-2.22]	2.43 [1.70-2.73]	0.03	1.70 [1.04-2.78]
Number of drug prescriptions per consultation for patients aged ≥65 and per GP (median [IQR])	3.70 [3.30-4.23]	4.54 [4.11-5.28]	<0.001	4.70 [2.51-8.83]

GP: general practitioner, IQR: interquartile range, BZD/ZDs: benzodiazepine and Z-drugs

Qualitative variables are described as numbers (%) and quantitative variables as median [interquartile range (IQR)]

* P-value obtained from chi-squared test or Fisher's exact tests for qualitative variables and Mann-Whitney test for quantitative variables

** Unadjusted Odd Ratio obtained from univariate logistic regression model

TABLE 3. Final multivariate _models:_ GP predictors of overprescription of BZD/ZDs among older patients (n=117)

Model 1 (N=117)		
	Adjusted OR*** [95%CI]	P value****
Number of chronic diseases per consultation*	2.10 [1.22-3.64]	0.008
Duration of participation in the study <6.3 years	2.94 [1.28-6.67]	0.010
Model 2 (N=117)		
	Adjusted OR*** [95%CI]	P value****
Number of prescribed drugs (other than BZD/ZDs) per consultation**	5.29 (2.72-10.28)	<0.001
Duration of participation in the study <6.3 years	3.13 (1.27-7.69)	0.013

* OR per additional chronic disease consultation result
** OR per additional drug prescribed during a consultation
_***_ Adjusted Odd Ratio obtained from multivariate logistic regression model
_****_ _P-value_ for obtained from the Wald test using multivariate logistic regression model

TABLE 4: Final multivariate _models :_ GP predictors of overprescription of BZD/ZDs among older patients (when BZD/ZD prescription is considered as a continuous variable) (n=117)

Model 1 (N=117)		
	Adjusted regression coefficient*** [95%CI]	P Value****
Number of chronic diseases per consultation*	0.016 (0.003-0.029)	0.017
Duration of participation in the study <6.3 years	0.015 (-0.006-0.036)	0.155
Model 2 (N=117)		
	Adjusted regression coefficient*** [95%CI]	P Value****
Number of prescribed drugs (other than BZD/ZDs) per consultation**	0.038 (0.027-0.048)	<0.001
Duration of participation in the study <6.3 years	0.013 (-0.005-0.030)	0.153

* Average 2% increase in the BZD/ZD prescription rate for each additional chronic disease consultation result per consultation and per GP .
** Average 4% increase in the BZD/ZD prescription rate for each additional drug prescription per consultation and per GP
_***_ Adjusted regression coefficient obtained from multivariate linear regression model
_****_ _P-value_ obtained from multivariate linear regression model

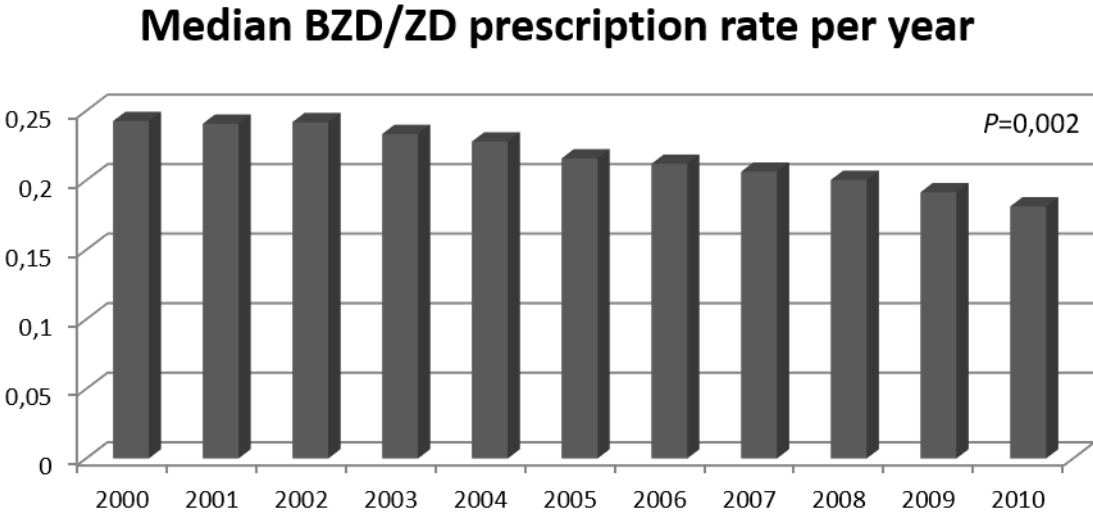**FIGURE 1: Median BZD/ZD prescription rate per year during the study period (2000-2010)**

Median BZD/ZD prescription rate per year

Table S1: ATC Classification for BZD/ZDs

DCI	Code ATC
Avizafone hydrochloride	
Bromazepam	N05BA
Camazepam	N05BA
Chlordiazepoxide	N05BA
Clobazam	N05BA
Clonazepam	N03AE
Clorazepate dipotassium	N05BA
Clotiazepam	N05BA
Cloxazolam	N05BA
Delorazepam	
Diazepam	N05BA
Estazolam	N05CD
Ethyl loflazepate	N05BA
Fludiazepam	N05BA
Flunitrazepam	N05CD
Flurazepam	N05CD
Halazepam	N05BA
Haloxazolam	
Ketazolam	N05BA
Loprazolam	N05CD
Lorazepam	N05BA
Lormetazepam	N05CD
Medazepam	N05BA
Midazolam	N05CD
Midazolam hydrochloride	
Nimetazepam	
Nitrazepam	N05CD
Nordazepam	N05BA
Oxazepam	N05BA
Oxazolam	
Pinazepam	N05BA
Prazepam	N05BA
Temazepam	N05CD
Tetrazepam	M03BX
Tofisopam	N05BA
Triazolam	N05CD
Zopiclone	N05CF
Zolpidem	N05CF

ATC Classification	Type of medication
N05A	Antipsychotics
N05B	Anxiolytics
N05C	Hypnotics and sedatives
N06A	Antidepressants
N06B	Psychostimulants

Table S2. Description of the chronic diseases, as coded by the GP using the Dictionary of Consultation Results

Code number	Consultation result	Code number	Consultation result
826	AHT	621	Menorrhagia-Metrorrhagia
740	Hyperlipidaemia	19	Iron deficiency anaemia – Iron Deficiency
850	Low back pain	138	Goitre
828	Arthropathy/periarthropathy	112	Epicondylitis
818	Type 2 diabetes	45	Heart palpitations
753	Heartburn	446	Pollakiuria
715	Osteoarthritis	759	Addiction
754	Rhinitis	5	Acne
742	Insomnia	257	Polymorphic Complaint
859	Anxiety	153	Hiatus Hernia
757	Smoking	200	Memory loss
830	Tenosynovitis of the shoulder	402	Arterial Stenosis
848	Neck pain	87	Seborrheic dermatitis
723	Constipation	262	Generalized pruritus
741	Hypothyroidism	114	Epilepsy
711	Coronary artery disease	478	Breast (other)
739	Depressed mood	39	Hot flushes
762	Vertigo	447	Dysuria
717	Asthma	747	Nervousness
727	Depression	531	Dysmenorrhea
734	Epigastric distress	839	Dementia
732	Eczema	601	Glaucoma
721	Headache	143	Hallux valgus
720	Cancer	296	Tremor
219	Neuralgia-neuritis	604	Hyperthyroidism
823	Rhythm disorder (other)	240	Parkinsonian syndrome
748	Osteoporosis	205	Abdominal bloating
845	Prostate	176	Myocardial infarction
819	Atrial fibrillation or flutter	62	Hair loss
221	Obesity	602	Type 1 diabetes
761	Varicose veins of the lower limbs	600	Chronic gastritis
206	Migraine	270	Respiratory failure
709	Alcohol problem	7	Raynaud's syndrome
160	Hyperglycaemia	26	Senility
744	Poor circulation in the lower limbs	607	Viral hepatitis
722	Colic (syndrome)	825	Prostatitis
516	Overweight	829	Rheumatoid arthritis
224	Nails (disease of)	504	Paroxysmal tachycardia
223	Oedema of the lower limbs	412	Nail mycosis
719	Chronic bronchitis	15	Complex regional pain syndrome
106	Sexual dysfunction	528	Behavioural disorders
179	Kidney failure	539	Anorexia – bulimia
746	Menopause (problems and follow-up)	529	Manic-depressive syndrome
713	Arteritis of the lower limbs	606	Albuminuria

148	Stroke	530	Phobia
150	Haemorrhoids	838	Cirrhosis of the liver
820	Heart failure	103	Palmoplantar eczema, fissures
175	Urinary incontinence	843	Uterus (enlargement, fibroids)
239	Paraesthesia of the lower limbs	482	Eye (tearing)
846	Psychiatric disorder	840	Multiple sclerosis
140	Gout	421	Bed-wetting
6	Tinnitus	832	Horton disease
47	Carpal tunnel syndrome	486	HIV
162	Hyperuricemia	202	Premenstrual syndrome
290	Forefoot/midfoot pain or inflammation	705	Excessive sweating
263	Psoriasis	317	Tic