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Original Article

Use of Drugs Subject to Controlled Prescriptions: a Retrospective Analysis

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ABSTRACT

Objective: Use of drugs that may lead to abuse or dependence are subject to controlled prescriptions (CPs) in many countries, and these are closely monitored by health authorities. According to national regulations in Turkey, CPs may be red coloured (RCPs) or green coloured (GCPs). The aim of this study was to evaluate the use of such drugs in Istanbul.

Study Design: Retrospective case-control study.

Material and Methods: During the study period (01/01-31/12 2009), 502874 CPs were reported. Among these, 4000 CPs each month were randomly selected and evaluated.

Results: The majority of GCPs were issued to women (55.6%), while the majority of RCPs were issued to men (68.4%). GCPs were most frequently prescribed by physicians working in private hospitals (33.6%) while RCPs by physicians working in university hospitals (39.7%). GCPs were mostly prescribed by psychiatrists (37.6%) while for RCPs were child and adolescent psychiatrists (35.9%). Psycholeptics (ATC code N05) were the most prescribed controlled drugs (CDs) (43.8%). Methylphenidate (53.9%) was the mostly prescribed on RCPs and alprazolam (39.6%) was on GCPs.

Conclusion: We demonstrate that utilization of CDs shows demographical and institutional differences. These data could be of help to improve surveillance of CDs as well as to train prescribers and patients.

Key Words: Controlled prescriptions, controlled medicines, narcotics, psychotropic medications, green and red coloured scripts

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Introduction

The use of drugs that may lead to abuse or dependence are limited by national and international regulations, and are subject to controlled prescriptions (CPs) in many countries that are closely monitored by health authorities (1-6). According to national regulations in Turkey, CPs may be red coloured (RCPs) or green coloured (GCPs). Narcotic analgesics and methylphenidate drugs that are controlled according to Single Convention on Narcotic Drugs, should be issued on RCPs maximum for 10 days use (1). Drugs with abuse or dependence potential; psychotropic medications such as barbiturates and benzodiazepines that are controlled according to the Convention on Psychotropic Substances are issued on GCPs. Such CPs should contain three sheets; one original and two copies, one of which has to be sent monthly to the local health authorities (2, 5, 6).

Although controlled drugs (CDs) have the risk of abuse, their medical use has vital importance in the treatment of important health problems (7, 8). The monitoring of CPs and rational use of drugs concerned by these need detailed pharmacoepidemiological studies. In the literature, studies that have investigated use of CDs have mainly focusing on specific diagnoses or specific patient populations (9-16). The aim of this study was to evaluate the use of such drugs in Istanbul, Turkey's biggest metropolis.

Material and Methods

Data collection

All CPs (RCPs and GCPs) from all districts of Istanbul are transmitted to Provincial Directorate of Health in Istanbul on a monthly basis (5, 6). All CPs are handwritten and archived as original hard copies. Among the CPs (RCPs and GCPs) issued between the 1st of January 2009 and the 31st of December 2009 (study period) archived by the Provincial Health Directorate of İstanbul, a sample of 4000 for each month were randomly selected and retrospectively evaluated. CPs were anonymously coded to avoid patient identification, and then data was extracted and entered into the study database in a standardized manner (using ATC [Anatomical Therapeutic Chemical] classification for drugs, and ICD-10 codes [International Statistical Classification of Diseases and Related Health Problems] for diagnoses).

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Statistical Analysis

Statistical analyses were carried out by Microsoft Excel and SPSS v.11.0 programs. Statistical comparisons were based on Chi-square test at a $p<0.05$ level of significance.

Results

During the study period, 463811 CPs were issued (88094 RCPs, and 375717 GCPs), and 10.3% of these (n=48000) were evaluated here. Among these CPs, 78.9% (n=37868) were GCPs, and 21.1% (n=10132) were RCPs. A total of 50 792 drugs were prescribed on CPs and 78.1% of them were on GCPs and 21.9% of them were on RCPs.

Almost one third of all CPs (31.9%) did not specify the prescribed dose. A minority (5.8%) did not contain information on pharmaceutical form, and among those that did (n=47860), 78.3% were tablets. Over two-thirds of CPs (69.0%) did not indicate patient age, and 2.2% omitted gender. When gender was noted, 50.6% were women. GCPs were issued more frequently to women (55.6%), while RCPs were more frequently issued to men (68.4%), ($p<0.05$).

Mean (SD) age, when noted (n=14856, 31.0%), was 45.9 years (20.5). CPs were mostly issued to patients aged between 45-64 years (38.0%). When GCPs and RCPs were compared by age groups, except for 18-44 age group, RCPs were mostly prescribed in all other age groups and this difference was statistically significant ($p<0.05$), (Table 1).

Controlled prescriptions were most frequently issued by physicians working in private hospitals (30.3%) followed by those who worked in state hospitals (27.7%), primary healthcare centers (18.7%), and university hospitals (15.3%). GCPs were most frequently issued by physicians working in private hospitals (33.6%), while RCPs were more frequently issued by physicians working in university hospitals (39.7%), ($p<0.05$) (Table 2).

Among CPs indicating physician specialty, the most frequent prescribers were psychiatrists (33.3%), internists (13.1%), and neurologists (12.0%). GCPs were mostly issued by psychiatrists (37.6%), neurologists (15.6%), and internists (15.5%), while for RCPs were mostly issued by child and adolescent psychiatrists (35.9%), psychiatrists (21.2%), and anaesthesiologists (14.0%) (Table 3). The majority of CPs (86.0%) were prescribed by internal medicine specialists (87.1% in GCPs and 82.8% in RCPs). Fourteen per cent of the CPs were prescribed by physicians from surgical specialties (12.9% in GCPs and 17.2% in RCPs).

Distribution of the first three prescribed drugs according to physicians' specialty were evaluated. Alprazolam was most frequently issued drug by internists (46.1%), neurologists (46.1%), general practitioners (43.7%), family practitioners (41.0%), psychiatrists (37.7%), and general surgeons (31.0%). Tramadol was most frequently issued by physical therapy and rehabilitation specialists (85.1%), orthopaedists (66.1%), neurosurgeons (52.4%), and anaesthetists (37.9%). Fentanyl was most frequently issued by radiation oncologists (57.4%), and medical

Table 1. Distribution of controlled prescriptions by age groups

Age (years)	GCPs, n (%)	RCPs, n (%)	Total CPs, n (%)	Statistic (Chi-square)
<18	1116 (9.5)	621 (20.0)	1737 (11.7)	
18-44	4225 (36.0)	510 (16.4)	4735 (31.9)	
45-64	4438 (37.8)	1214 (39.1)	5652 (38.0)	p<0.05
≥65	1969 (16.8)	763 (24.5)	2732 (18.4)	
Total*	11748 (100.0)	3108 (100.0)	14856 (100.0)	

*Only the prescriptions with data on patients' age were analyzed
GCPs: Green coloured prescriptions, RCPs: Red coloured prescriptions, CPs: Controlled prescriptions

Table 2. Distribution of controlled prescriptions by healthcare centers

	GCPs, n (%)	RCPs, n (%)	Total CPs, n (%)	Statistic (Chi-square)
Healthcare Centers				
Private hospitals	12734 (33.6)	1825 (18.0)	14559 (30.3)	
State hospitals				
Training	5052 (13.3)	2181 (21.5)	7233 (15.1)	
Other state	4861 (12.8)	815 (8.0)	5676 (11.8)	
Military	284 (0.8)	89 (0.9)	373 (0.8)	p<0.05
Primary healthcare centers	8871 (23.4)	88 (0.9)	8959 (18.7)	
University hospitals	3307 (8.7)	4020 (39.7)	7327 (15.3)	
Consulting rooms	2320 (6.1)	1094 (10.8)	3414 (7.1)	
Workplace physicians	355 (0.9)	2(0.0001)	357 (0.7)	
Others	76 (0.2)	18 (0.2)	94 (0.2)	
Total	37860 (100.0)	10132 (100.0)	47992 (100.0)	

GCPs: Green coloured prescriptions, RCPs: Red coloured prescriptions, CPs: Controlled prescriptions

Table 3. Distribution of controlled prescriptions by physicians' specialty

	Controlled prescription		
	GCPs, n (%)	RCPs, n (%)	Total, n (%)
Psychiatry	10442 (37.6)	2088 (21.2)	12530 (33.3)
Internal medicine	4303 (15.5)	619 (6.3)	4922 (13.1)
Neurology	4343 (15.6)	154 (1.6)	4497 (12.0)
Child and adolescent psychiatry	209 (0.8)	3535 (35.9)	3744 (10.0)
Anaesthesia	1349 (4.9)	1378 (14.0)	2727 (7.2)
Paediatrics	1601 (5.8)	87 (0.9)	1688 (4.5)
Radiation oncology	474 (1.7)	978 (9.9)	1452 (3.9)
General surgery	582 (2.1)	175 (1.8)	757 (2.0)
Physical therapy and rehabilitation	734 (2.6)	14 (0.1)	748 (2.0)
Neurosurgery	624 (2.2)	43 (0.4)	667 (1.8)
Medical oncology	225 (0.8)	361 (3.7)	586 (1.6)
Family medicine	539 (1.9)	30 (0.3)	569 (1.5)
Chest diseases	286 (1.0)	271 (2.7)	557 (1.5)
General practitioner	280 (1.0)	8 (0.1)	288 (0.8)
Orthopaedics	365 (1.3)	8 (0.1)	373 (1.0)
Others	1409 (5.1)	111 (1.1)	1520 (4.0)
Total*	27765 (100.0)	9860 (100.0)	37625 (100.0)

*Only the prescriptions issued with physicians' specialty were analyzed
GCPs: Green coloured prescriptions, RCPs: Red coloured prescriptions, CPs: Controlled prescriptions

oncologists (46.4%). Child and adolescent psychiatrists most frequently issued methylphenidate (93.9%), and chest physicians most frequently issued codeine (24.3%) (Table 4).

Among the 50792 prescribed drugs, psycholeptics (43.8%) were most frequently issued therapeutic class, followed by analgesics (19.1%), antiepileptics (13.2%), psychoanaleptics (11.9%), antiparkinson drugs (9.6%), codeine (2.2%) and anesthetics (0.2%). GCPs were mostly for psycholeptics (56.1%), followed by antiepileptics (16.9%), analgesics (14.4%), antiparkinson drugs (12.3%) and codeine (0.1%) while RCPs were mostly for psychoanaleptics (53.9%), followed by analgesics (35.6%), codeine (9.7%), anesthetics (0.6%) and psycholeptics (0.1%) (Figure 1). With regards to individual drugs, alprazolam (31.0%) was mostly issued on CPs followed by methylphenidate (11.8%), tramadol (11.2%), biperiden (9.6%), clonazepam (8.0%), diazepam (7.2%), fentanyl (6.0%), phenobarbital (5.2%), lorazepam (2.3%) and codeine (2.2%). With regards to CPs type, alprazolam (39.6%) was mostly issued on GCPs followed by tramadol (14.4%), biperiden (12.3%), clonazepam (10.2%), diazepam (9.3%), phenobarbital (6.6%), lorazepam (2.9%), chlordiazepoxide (1.8%), zopiclone (1.2%) and clorazepate (0.7%). Methylphenidate (53.9%) was most frequently issued drug on RCPs, followed by fentanyl (27.5%), codeine (9.7%), morphine (5.1%), pethidine (3.0%), remifentanyl (0.6%), and alfentanyl (0.04%) (Figure 2).

Table 4. Distribution of the first three prescribed drugs according to physicians' specialty

	Controlled prescription		
	Type	Drug prescribed	n (%*)
Psychiatry (n=13073)	GCP	Alprazolam	4930 (37.7)
	GCP	Biperiden	2592 (19.8)
	RCP	Methylphenidate	2125 (16.3)
Internal medicine (n=5198)	GCP	Alprazolam	2397 (46.1)
	GCP	Tramadol	890 (17.1)
	RCP	Fentanyl	473 (9.1)
Neurology (n=4673)	GCP	Alprazolam	2154 (46.1)
	GCP	Clonazepam	631 (13.5)
	GCP	Diazepam	553 (11.8)
Child and adolescent psychiatry (n=3869)	RCP	Methylphenidate	3633 (93.9)
	GCP	Phenobarbital	76 (2.0)
	GCP	Clonazepam	40 (1.0)
Anaesthesia (n=3132)	GCP	Tramadol	11087 (37.9)
	RCP	Fentanyl	873 (27.9)
	RCP	Codeine	526 (16.8)
Paediatrics (n=1748)	GCP	Phenobarbital	1060 (60.6)
	GCP	Clonazepam	282 (16.1)
	GCP	Diazepam	176 (10.1)
Radiation oncology (n=1688)	RCP	Fentanyl	969 (57.4)
	GCP	Tramadol	408 (24.2)
	GCP	Alprazolam	102 (6.0)
General surgery (n=816)	GCP	Alprazolam	253 (31.0)
	GCP	Tramadol	153 (18.8)
	RCP	Pethidine	94 (11.5)
Physical therapy and rehabilitation (n=777)	GCP	Tramadol	661 (85.1)
	GCP	Alprazolam	58 (7.5)
	GCP	Diazepam	28 (3.6)
Neurosurgery (n=727)	GCP	Tramadol	381 (52.4)
	GCP	Alprazolam	161 (22.1)
	GCP	Phenobarbital	59 (8.1)
Medical oncology (n=670)	RCP	Fentanyl	311 (46.4)
	GCP	Tramadol	164 (24.5)
	RCP	Codeine	81 (12.1)
Family medicine (n=580)	GCP	Alprazolam	238 (41.0)
	GCP	Clonazepam	63 (10.9)
	GCP	Tramadol	62 (10.7)
Chest diseases (n=617)	RCP	Codeine	150 (24.3)
	RCP	Fentanyl	149 (24.1)
	GCP	Tramadol	130 (21.1)
General practitioner (n=316)	GCP	Alprazolam	138 (43.7)
	GCP	Diazepam	45 (14.2)
	GCP	Tramadol	34 (10.8)
Orthopaedics (n=407)	GCP	Tramadol	269 (66.1)
	GCP	Alprazolam	102 (25.1)
	GCP	Diazepam	4 (1.0)

*By the total number of medicines prescribed in related specialties
GCPs: Green coloured prescriptions, RCPs: Red coloured prescriptions, CPs: Controlled prescriptions

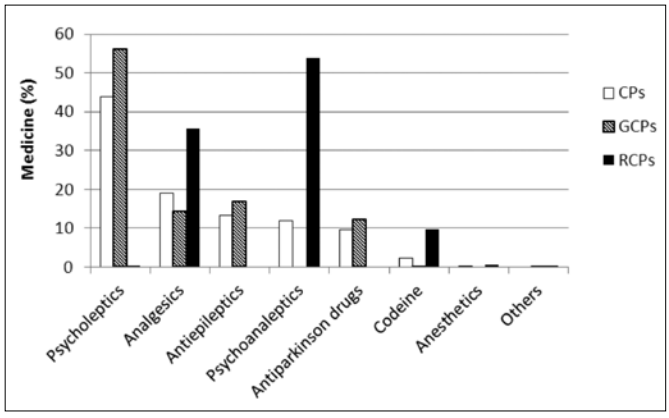

Figure 1. Distribution of the drugs subject to control by main therapeutic classes

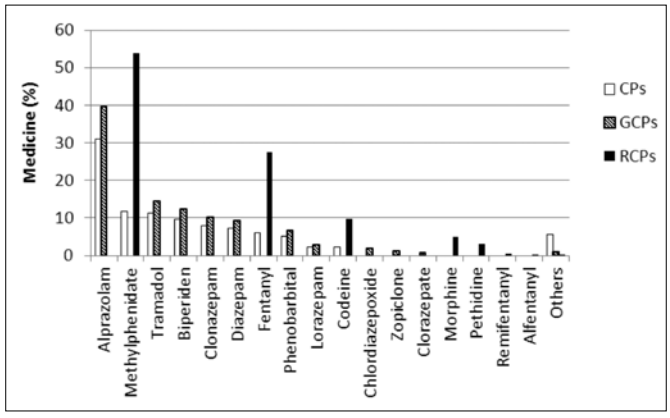

Figure 2. Distribution of drugs subject to control by ATC-5 classification

Table 5. Distribution of the diagnoses written out on controlled prescriptions

	GCPs, n (%)	RCPs, n (%)	Total CPs, n (%)
Diagnose (ICD-10 Code)			
Other anxiety disorders (F41)	11893 (32.9)	36 (0.4)	11929 (26.0)
Depressive episode (F32)	6721 (18.6)	47 (0.5)	6768 (14.7)
Neoplasms (C00-D48)	2255 (6.2)	3523 (36.1)	5778 (12.6)
Hyperkinetic disorders (F90)	-	5696 (58.3)	5696 (12.4)
Epilepsy (G40)	4122 (11.4)	-	4122 (9.0)
Unspecified non-organic psychosis (F29)	2176 (6.0)	-	2176 (4.7)
Pain, not elsewhere classified (R52)	1706 (4.7)	247 (2.5)	1953 (4.3)
Schizophrenia (F20)	1854 (5.1)	-	1854 (4.0)
Bipolar affective disorder (F31)	1160 (3.2)	-	1160 (2.5)
Non-organic sleep disorders (F51)	744 (2.1)	-	744 (1.6)
Dorsalgia (M54)	511 (1.4)	37 (0.4)	548 (1.2)
Other spondylopathies (M48)	-	19 (0.2)	19 (0.04)
Other peripheral vascular diseases (I73)	-	19 (0.2)	19 (0.04)
Other deforming dorsopathies (M43)	-	8 (0.1)	8 (0.02)
Other soft tissue disorders, not elsewhere classified (M79)	-	9 (0.1)	9 (0.02)
Others	2981 (8.3)	130 (1.3)	3111 (6.8)
Total	36123 (100.0)	9771 (100.0)	45894 (100.0)

GCPs: Green coloured prescriptions, RCPs: Red coloured prescriptions, CPs: Controlled prescriptions

Only 45 894 (95.6%) of all CPs could be stratified by ICD-10 codes as not all handwriting was legible. The most frequent indication was other anxiety disorders (26.0%), followed by depressive episode (14.7%), neoplasms (12.6%), and hyperkinetic disorders (12.4%). According to prescription type, among GCPs the most frequent indication was other anxiety disorders (32.9%), followed by depressive episode (18.6%), and epilepsy (11.4%); among RCPs most frequent indication was hyperkinetic disorders (58.3%), followed by neoplasms (36.1%) (Table 5).

The most frequent medicines prescribed for the ten most frequent indications were evaluated. For anxiety disorders, depressive episodes, and non-organic sleep disorders alprazolam was the most frequently prescribed medicine (70.9%, 68.3%, and 36.0%, respectively). For neoplasms this was fentanyl (42.0%), for hyperkinetic disorders this was methylphenidate (99.0%); for epilepsy this was phenobarbital (51.1%); for unspecified non-organic psychosis, schizophrenia, and bipolar affective disorder this was biperiden (65.9%, 85.0%, and 49.3%, respectively) and for pain not elsewhere classified this was tramadol (79.7%) (Table 6).

Discussion

The evaluation of CPs not only provides information on use of these drugs, but also serves as potential data sources for structural regulations. Such field studies could have poten-

tial importance in countries without electronic prescription databases, such as Turkey. The CPs are in two different types in Turkey, and the proportion of GCPs and RCPs is important to know for regulations and prescription monitoring. We found that the majority of CPs were GCPs (78.9%). This finding alone points out that drugs prescribed by GCPs and RCPs should be controlled by separate regulations.

Rational prescribing requires the exact amount of active substance to be mentioned, and this has particular importance for CPs (17, 18). The Drug Authority of Turkish Ministry of Health has indicated the maximum dose of CDs that should be issued on RCPs (6). We have identified that almost one third of all CPs (31.9%) did not contain the active substance information, suggesting that physicians did not act rational while prescribing those drugs.

Another important rule for rational prescribing is indicating patient age, particularly for the children. However, in our study, over two-thirds of CPs did not indicate patient age. Physicians are either more careful while prescribing CPs for children (17, 18). CPs were more frequently issued to patients aged 45-64 years (38.0%). Moreover, there were differences among the age groups for the proportion of GCPs and RCPs. For instance, it was found that for the 18-44 age group, GCPs (36.0%) were more frequently prescribed than RCPs (16.4%) while for the patients aged <18 years, RCPs (20.0%) were more prescribed than GCPs (9.5%) (Table 1). This difference for the patients aged <18 years could be related to the CPs for the treatment of hyperkinetic disorders, and the CPs for the treatment of anxiety and depressive disorders in patients aged 18-44 years. Hyperkinetic disorders among child/adolescents and anxiety disorders among adults are more commonly observed (19-24).

Some diseases could be more extensively cured in certain health institutions based on their healthcare service capacity. We found that GCPs were most frequently prescribed at private hospitals (33.6%), while RCPs at university hospitals (39.7%) (Table 2). This difference could be due to the predominant distribution of child and adolescent psychiatrists' in university hospitals, in Turkey (25).

When GCPs were analyzed according to diagnosis, more than half of the diagnosis were anxiety and depressive disorders (51.5%), and psycholeptics (56.1%), mostly benzodiazepines, were mostly prescribed. On the other hand, diagnosis for 58.3% of RCPs were hyperkinetic disorders, psychoanaleptics (53.9%) were the most frequently prescribed. In our study GCPs were mostly prescribed for women and anxiety and depressive disorders while RCPs for mostly men and hyperkinetic disorders correlate well with the fact that in women anxiety disorders and in men hyperkinetic disorders are more common (26-29). In the studies carried out in various countries that investigated the utilization of psychotropic drugs, benzodiazepines were the most frequently prescribed (30-32). Moreover, a study from Bosnia&Herzegovina noted that among the nervous system drugs, psycholeptics and psychoanaleptics were commonly used drug groups (33).

One of interesting findings was that only 2.3% of the CPs were prescribed in primary healthcare including family physicians and general practitioners (Table 2). A new health system reform is being implemented in Turkey, and according to this new health system, family practitioners, a new specialization in Turkey, will be constituted. Therefore, the reasons for this low rate should be evaluated in order to prevent patients' unjust treatment (34). According to the IMS Health report on National Prescription Audit (NPA), in America, the proportion of the prescriptions for psychotropic drugs by primary care physicians increased by 10.6% from 1996 to 2001 and they were responsible for the 80% of all anxiolytic and 65% of antidepressant prescriptions. This increase was correlated with the national legislation about primary care settings (35). Following the integration of the structural regulation process in primary care, in Turkey, proportion of the psychotropic medication prescribing is estimated to increase. Undoubtedly, some of these medications will include CDs. Therefore, it would be better to get prepared for this progress and its consequences.

When the distribution of the first three drugs prescribed for the most frequent 10 diagnoses were evaluated, it was found that alprazolam was preferred for anxiety/depressive episodes; fentanyl and tramadol for cancer; methylphenidate for hyperkinetic disorders; phenobarbital for epilepsy; biperiden for unspecified non-organic psychosis, schizophrenia, and bipolar affective disorder; tramadol for pain (not elsewhere classified); alprazolam and zopiclon for non-organic sleep disorders (Table 6). A study from multiple countries (France, Germany, Italy, UK) and other study from Thailand, lorazepam (31, 32); two studies from Bosnia&Herzegovina and UK diazepam was the mostly prescribed anxiolytic (33, 36). It can be deduced that while benzodiazepines are commonly preferred for anxiety disorders; the first preferred drug can vary by countries. Opioid analgesics are widely used for the treatment of cancer pain. According to the 2010 report of the International Narcotics Control Board, worldwide opioid analgesic consumption for the treatment of pain increased, but it still remains below the expected levels (37, 38). In the literature, studies investigated the consumption of opioids revealed different opioid analgesic use. For instance, predominantly used opioid was codeine in Australia and Norway; tramadol was in Bosnia & Herzegovina (33, 39, 40). The study from Norway reported that tramadol was among the commonly used opioid for non-cancer pain and fentanyl was for cancer pain and these findings were found correlated with our results (40).

The strengths of our study are, first, through retrieval and ascertainment of a large number of CPs, all of which were reviewed manually by the same person. Second, we had valid prescription data that prescriptions evaluated were archived as original hard copies. Third, this is the first descriptive study on utilization of CPs in Turkey also for structural health regulations.

Our study had some limitations. Due to ethical considerations, patient and physician identifiable data were not collected. Therefore, prescription patterns by individual physician or drug use patterns for individual patient could not be evaluated. Furthermore, additional intervention was not performed for the validation of diagnosis and other information found on the prescriptions. The number of CPs were kept high (4000 CPs/month) to minimize the effect of duplicated data.

In this study, utilization of CDs showed demographical and institutional differences. In general, CDs prescribed on CPs

Table 6. Distribution of the first three drugs prescribed for the most frequent 10 diagnoses

		Controlled prescription	
Diagnose (ICD-10 Code)	**Type**	**Drugs prescribed**	**n (%)**
Other anxiety disorders (F41)	GCP	Alprazolam	8744 (70.9)
	GCP	Diazepam	1597 (13.0)
	GCP	Clonazepam	648 (5.3)
		Others	1344 (11.8)
Depressive episode (F32)	GCP	Alprazolam	4773 (68.3)
	GCP	Diazepam	739 (10.6)
	GCP	Clonazepam	562 (8.1)
		Others	910 (13.0)
Neoplasms (C00-D48)	RCP	Fentanyl	2818 (42.0)
	GCP	Tramadol	1963 (29.3)
	RCP	Codeine	840 (12.5)
		Others	1083 (16.3)
Hyperkinetic disorders (F90)	RCP	Methylphenidate	5842 (99.0)
	RCP	Fentanyl	18 (0.3)
	GCP	Clonazepam	9 (0.2)
		Others	29 (0.5)
Epilepsy (G40)	GCP	Phenobarbital	2189 (51.1)
	GCP	Clonazepam	1619 (37.8)
	GCP	Diazepam	278 (6.5)
		Others	197 (4.6)
Unspecified non-organic psychosis (F29)	GCP	Biperiden	1525 (65.9)
	GCP	Alprazolam	233 (10.1)
	GCP	Clonazepam	217 (9.4)
		Others	339 (14.6)
Pain, not elsewhere classified (R52)	GCP	Tramadol	1600 (79.7)
	RCP	Codeine	99 (4.9)
	RCP	Fentanyl	82 (4.1)
		Others	226 (12.3)
Schizophrenia (F20)	GCP	Biperiden	1672 (85.0)
	GCP	Clonazepam	102 (5.2)
	GCP	Alprazolam	82 (4.2)
		Others	112 (5.6)
Bipolar affective disorder (F31)	GCP	Biperiden	605 (49.3)
	GCP	Alprazolam	234 (19.1)
	GCP	Clonazepam	151 (12.3)
		Others	237 (19.3)
Non-organic sleep disorders (F51)	GCP	Alprazolam	276 (36.0)
	GCP	Zopiclone	249 (32.5)
	GCP	Clonazepam	130 (16.9)
		Others	112 (14.6)

GCPs: Green coloured prescriptions, RCPs: Red coloured prescriptions, CPs: Controlled prescriptions

were compatible with the diagnosis. In contrast to this, missing information on active substance, patient age and gender on the considerable amount of CPs suggested that physicians' performance was not enough with regard to rational prescribing. All these findings should be taken into consideration while developing CPs follow-up systems and building national/international regulations.

Ethics Committee Approval: Ethical approval was received from Istanbul 3 Numbered Clinical Trials Ethics Committee (Ethics approval number: 2009-KK-062) for this study.

Informed Consent: *N/A.*

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