



**WINEG**

WISSENSCHAFTLICHES  
INSTITUT DER TK  
FÜR NUTZEN UND EFFIZIENZ  
IM GESUNDHEITSWESEN

## **Financial burden of gender-specific drug addiction**

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- § **Size of the problem: dimensions of drug abuse**
- § **Affected drugs abuse and cost estimates**
- § **Major patient groups**
- § **What is to be done?**

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## On-going discussions show that drug abuse is to be seen a current danger to patients' safety

§ political debate in Germany:  
major political party has lately claimed comprehensive information of the problem

§ Current study of a big German sickness funds reported rising consumption of psychotropic drugs by students



**Growing concern at the abuse of drugs as well mirrored by the media...**

## Media discussions

Süddeutsche Zeitung Magazin 15.2.2008  
**Die Welt als Pille und Vorstellung**

§ German media discuss drugs becoming a socially accepted means of „self-optimization“

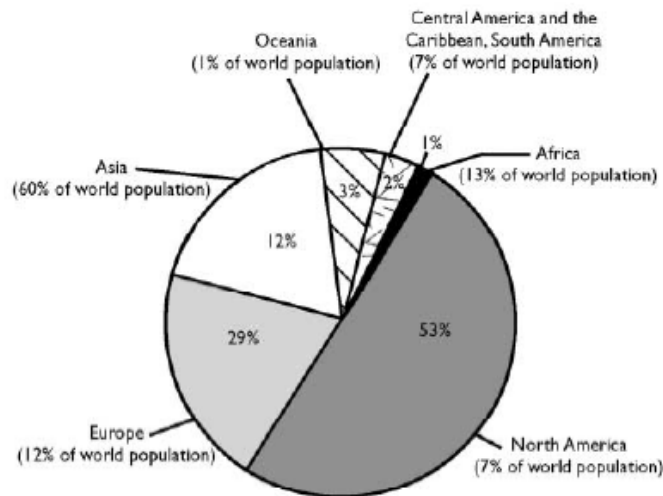
o war das eigentlich nicht gedacht: Immer mehr Menschen nehmen Psychopharmaka, obwohl sie völlig gesund sind. Und Medizin wird auf einmal zum Lifestyle-Doping.

§ Recent report: 15 million Americans and an increasing number of Germans abuse drugs as substitutes for illegal drugs

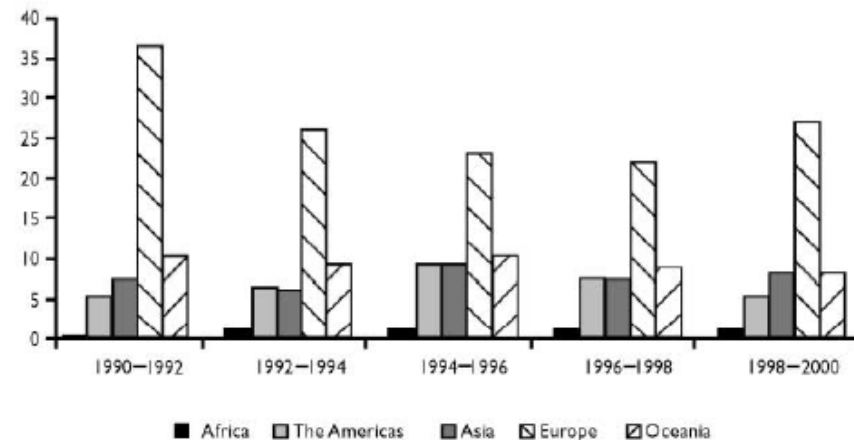
### Tendencies

- ▶ Growing international evidence for drug abuse
- ▶ Drugs as means of „self-optimization“
- ▶ Drugs substitute „illegal“ substances

# International perspective shows large differences in the consumption of psychotropics and analgesics



**Fig. 2** Disparities in the medical consumption of the main narcotic drugs by region (codeine, dextropropoxyphene, dihydrocodeine, fentanyl, hydromorphone, ketobemidone, morphine, oxycodone, pethidine, tilidine and trimeperidine) by region (1996-2000). Data supplied by the International Narcotics Control Board.



**Fig. 5** Average consumption of benzodiazepine-type sedative hypnotics. Defined daily doses per 1000 inhabitants per day. Data supplied by the International Narcotics Control Board.

Yet: 25-30% of all patients were prescribed psychotropic drugs without being diagnosed as having a mental disorder (Fombonne et al., 1989)

**If so, what is the extent of non-medical use of drugs?**

# Non-medical use of drugs, drug addiction and drug abuse

## Criteria for the diagnosis of drug addiction according to ICD-10

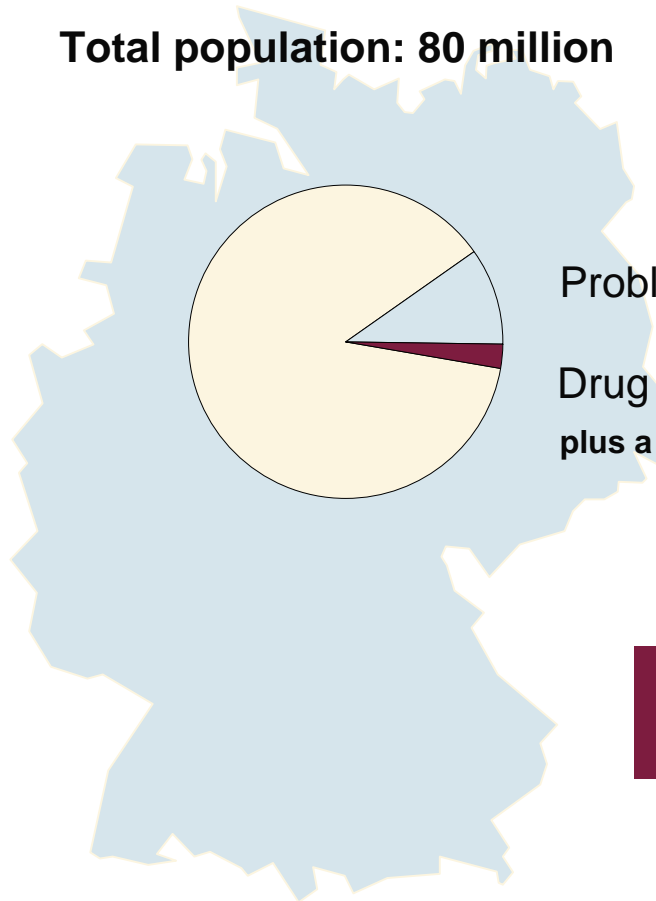
- § Irresistible wish for drug consume
- § Limited ability to control own consume behaviour
- § Typical symptoms at the withdrawal of the drug
- § Drug tolerance and loss of efficacy
- § Neglect of other interests due to the time needed to purchase drugs or recover after consumption
- § Continuing drug consume in spite of obvious negative effects

Three or more criteria have been fulfilled at the same time during the last twelve months



## High estimated prevalence of drug addiction in Germany

**Total population: 80 million**



Problematic drug consumption (aged 18-59): 8 million<sup>1)</sup>

Drug addicted people (>18 years): 1,4<sup>2)</sup>-1,9 million<sup>3)</sup>  
plus a high number of unreported cases due to private prescriptions

**Drug addiction in Germany on second position after nicotine drug dependency<sup>3)</sup>**

(1) Kraus L et al. 2006, Monitoring

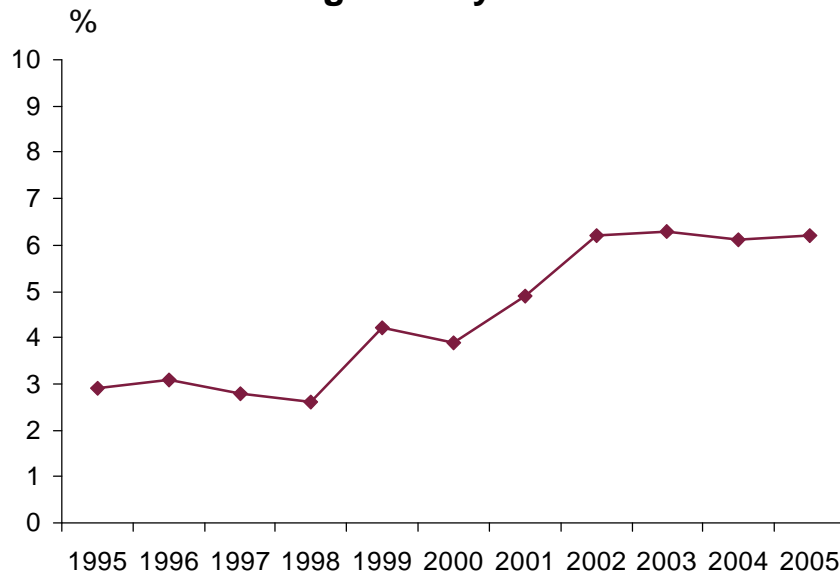
(2) Varying estimations by different sources (Glaeske G. Jahrbuch Sucht 2008)

(3) Soyka M et al., Der Nervenarzt 2005; 76:72

# USA: Abuse of controlled prescription drugs nearly doubled 1992 - 2003

## USA

**Non-medical drug use of prescription-type psychotherapeutic drugs among persons aged >12 years**



▶ **Number of Americans who abuse controlled prescription drugs has jumped from 7,8 million in 1992 to 15,1 million in 2003**

▶ **Non-medical use of controlled prescription drugs is on fourth position for substance abuse after marijuana, alcohol and tobacco**

Source: Manchikanti L, Pain Physician 2007; 10:399; CASA in Journal of Pain & Palliative Care Pharmacotherapy 2006; 20:61

## Turkey: weak databasis, but hints for rising prevalence

### Turkey

- § In general: drug abuse and substance abuse less than in other countries <sup>1)2)</sup>
- § Yet: rising prevalence <sup>2)</sup>
- § turkish migrantes in Germany: rising abuse of tilidine <sup>3)</sup>
- § Most affected group of drug addiction are women, yet the awareness of the problem is widely missing



Sources: (1) Parla F Dissertation 2005; (2) Colak B et al. In: American Journal of Forensic Medicine and Pathology, 2006; 27:50; (3) Medical Tribune 7.12.2007

- § Size of the problem: dimensions of drug abuse
- § **Affected drugs and cost estimates**
- § Major patient groups
- § What is to be done?

## Drugs with potential for abuse

- § 4-6% of all prescribed drugs have an own potential for addictive or non-medical use
- § 30-35% of these drugs are being prescribed not for medical purposes but in order to maintain an addiction / to avoid withdrawing symptoms

### Drugs with an own addictive potential:

- § Psychotropic drugs
  - § Sedativa and hypnotica
  - § Tranquilizer
  - § Stimulants
- § Analgesics

### Drugs without an own addictive potential but where misuse is possible

- § Antidepressants
- § Diuretics
- § Anorektics
- § Hormons

## Cost estimates Germany and USA



### Germany:

Estimated societal cost of addictive use of drugs:

14 billion €/ year



### USA:

Substance abuse and addiction ( licit drugs as well as illegal drugs)

1/4 trillion \$ / year

**Where do these costs come from?**

## Benzodiazepines continue to account for a high number of drug addicts in Germany

- § Estimates for Germany: 1-1,2 million of all drug addicts are addicted to benzodiazepines
- § Use as
  - § Hypnotica and sedativa (esp. for the elderly)
  - § Tranquilizer
- § High addictive potential, often as low-dose-dependency

### Problems

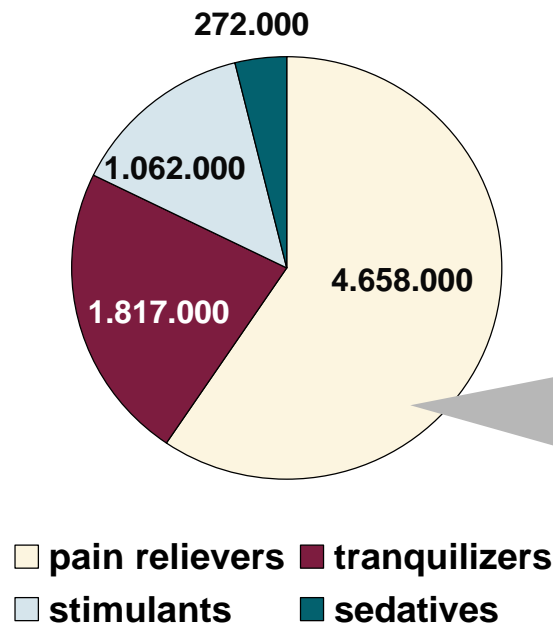
- ▶ Existing addiction often not realized (this may account for an additional unknown number of drug addicts!)
- ▶ No evidence for the efficacy of benzodiazepines in long-term use so far
- ▶ Strong negative side effects of benzodiazepines, esp. for elderly people

**Trend: prescriptions of benzodiazepines in Germany decline while prescriptions of non-benzodiazepines (e.g. Zopiclon) rise**

# USA: Pain relievers account for the largest portion of non-medically used prescription drugs

## Past month users, age >12 (2005)

All prescription drugs with non-medical use in the past month: 6.405.000



Estimated costs for the abuse of prescription type opioids (illegal use):

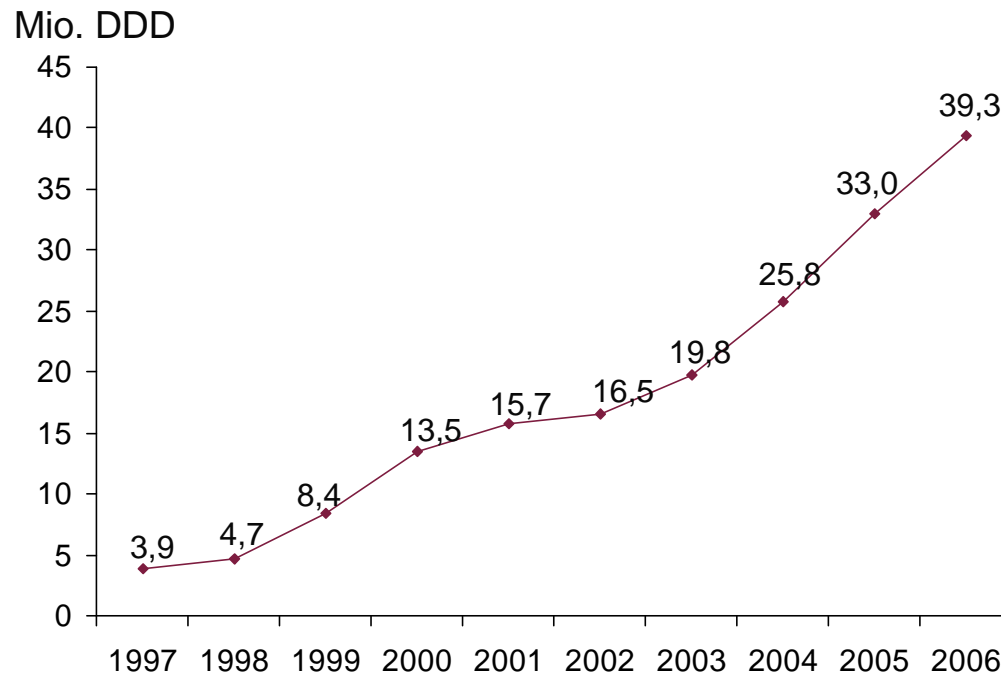
**8.6 billion \$ (2001)**

- § 2.6 billion \$ healthcare
- § 1.4 billion \$ criminal justice
- § 4.6 billion \$ workplace costs

Manchikanti L in: Pain Physician 2007; 10:399 (2005 National Survey on Drug Use and Health); Birnbaum H et al. In: Clin J Pain 2006; 22:667

# Other prescription drugs: the consumption of methylphenidate in Germany has risen dramatically.

Total numbers of prescriptions (Daily defined doses)



Medical or non-medical use?



Possible potential for abuse:

- § Overuse
- § Addictive use

## Rising abuse of prescription-type drugs illegally purchased

### Current example: tilidine

§ Abuse of prescription-type drugs but without prescription: theft and manipulation of prescriptions

#### Recent data

§ Increase of prescriptions in 2006<sup>1</sup> (DDDs: +10,99%) and turnover (+4,54%)<sup>1)</sup>

§ Major problem in Berlin: registration of 2200 Anzeigen zu Rezeptfälschungen bei Tilidin per year<sup>2)</sup>

§ Damage to a German sickness fund (TK)<sup>3)</sup> :

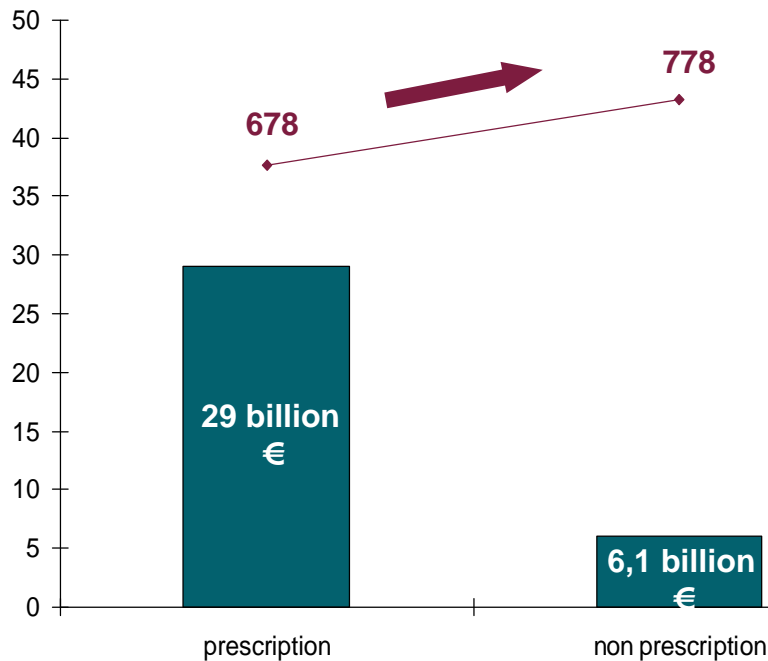
§ 2002-2007: 1.200 manipulated prescriptions of tilidine

§ Total financial burden: 57.165 €

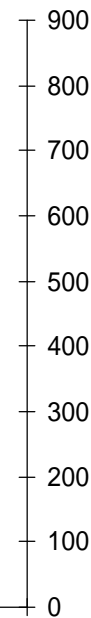
# Rising impact of OTC-drugs on drug abuse in USA as well as in Germany

## The German market: rising influence of OTC-drugs

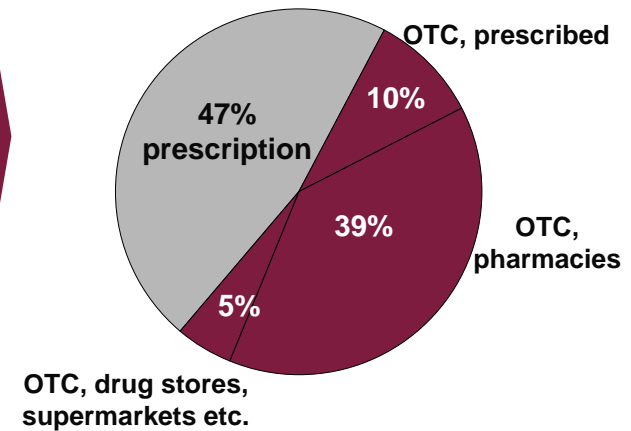
€ billion  
(total 2006:  
35,1 billion €)



Number of  
packages in million  
(total 2006: 1.456 million)



The majority of drugs (number of packages) in Germany is available without a prescription.



**OTC-products play an increasing role in the number of purchased packages, even though less important in terms of turnover**

## Germany: Non-prescription analgesics dominate OTC-sales

- § In 2006, 80% (122 million) of all packages of analgesics (149,3 million) were sold as over-the-counter-products <sup>1)</sup>
- § Negative side effects of analgesics:
  - § Analgesics nephropathy (caused by combinations of analgesics with caffeine)
  - § Headache at withdrawal (Entzugskopfschmerz)

### Costs

- § Estimates: the kidney failure of 10-15% of all patients undergoing a dialysis is caused by excessive consumption of analgesic combinations
- § Cost estimates (= expenses of the statutory health insurance in Germany):

**200-300 million € annually <sup>2)</sup>**

(1) Glaeske G, Jahrbuch Sucht 2008; (2) Glaeske G in: Sucht auf Rezept, 2001

## In USA, the abuse of Dextromethorphan is discussed as effect of the switch to OTC-drugs

### OTC

- § USA: more than 700 medications switched from prescription to OTC-status in the last 30 years
  - § account for 30% of the OTC-market today
  - § High potential for abuse
- § Estimated costs due to misuse or overdose of all OTC-medications:

**\$784 million / year**

### Dextrometorphan (DXM)

- § Most typically abused OTC-drug
- § Abuse of DXM by American teenagers 2005: 2,4 million teenagers
- § 1 in 10 American teens has abused OTC medications
- § Estimated purchasing costs of DXM by teenagers:

**\$84 million dollars / year**

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## Women: traditionally major affected group

### Drug consumption by men and women in the last 12 months<sup>5)</sup>

Drugs with psychotropic effects	females	males	ratio
Anorektika	4,9%	1,1%	4,5
Migränemittel	8,4%	2,2%	3,8
Psychotropic drugs	6,5%	2,2%	3,7
Beruhigungsmittel	11,0%	4,6%	3,0
Schlafmittel	6,5%	2,7%	2,4
Analgesics	62,2%	49,1%	1,3

### High addictive potential

- § 2/3-3/4 of all drug addicts in Germany are women<sup>1)</sup>
- § 4% of the insured women in the German public health funds are drug addicted, another 4% at risk of becoming addicted<sup>2)</sup>
- § Elderly women: 11% of the elderly women (>59) abuse psychotropic or prescription drugs<sup>3)</sup>
- § Women more likely by 37% to become addicted to tranquilizers<sup>4)</sup>

## At the same time, teenagers and young adults have become a major affected group of drug abuse

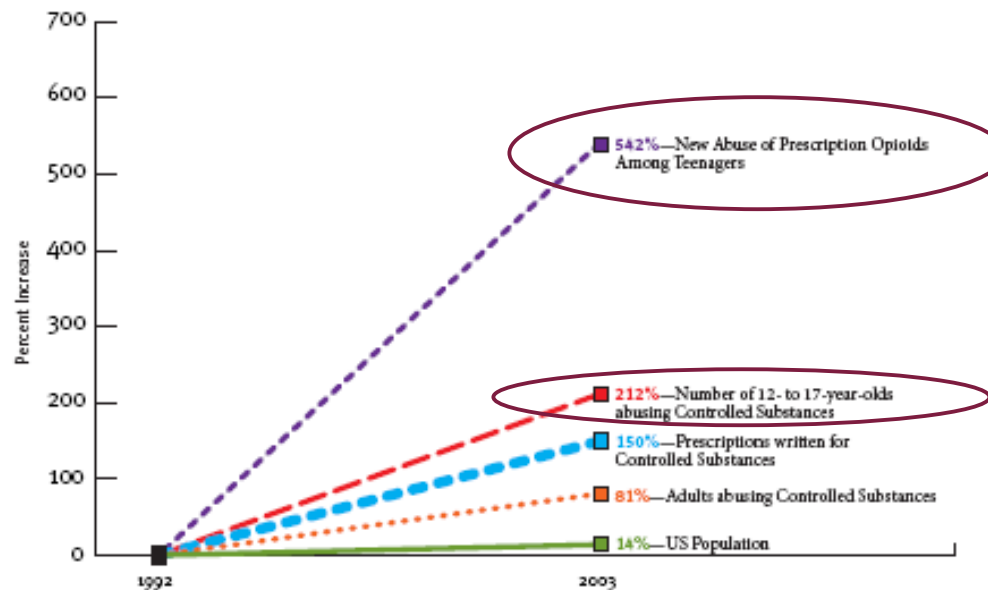


Fig. 1. Increase of controlled substance abuse from 1992 to 2003, in comparison to US population and prescriptions written for controlled substances.

## DXM-abuse as teenage problem in USA and on-going discussion in Germany

- § 1 in 10 American teens has abused OTC medications <sup>1)</sup> : Death of 5 teenagers in USA has led FDA to warn against abuse of DXM
- § Official evidence in Germany: 3-5 cases per year <sup>3)</sup>
- § Other numbers much higher: The ‚Giftnotruf Berlin‘ reported 10-15 serious cases of intoxication due to DXM per year
- § No official registration of cases of DXM-abuse or -inquiries yet

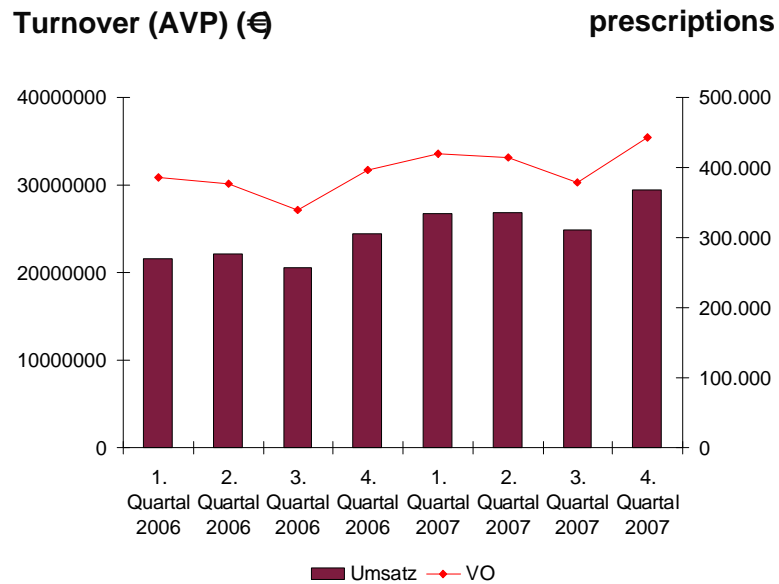
Yet:

- ▶ § Internat chatrooms indicate the existence of a DXM-community in Germany
- ▶ § Switzerland has already introduced a registering system

**Problem underestimated in Germany?**

# Methylphenidat is predominantly used for ADD therapy of children: increasing prescriptions

## Rising turnover and number of prescriptions 2006 and 2007



Insight Health, KV Analyzer 03/2008

## Reasons for rising prescriptions

### Medical use

- § Therapy of ADD
  - § Prevalence children and teens: 5,3%<sup>1)</sup>
  - § Prevalence adults: 1-2,5%<sup>2)</sup>

### Non-medical use

- § Unsufficient diagnostics
  - § Good evidence-based guidelines are not always followed
  - § Prescriptions not limited to children's specialists
- § Addictive potential

(1) Prevalence worldwide in: Polanczyk G et al. In: Am J Psychiat 1007; 164;942; (2) prevalence for Europe in: Kooij S et al in: Psychol Med 2005; 35:817

## Teenage and adolescent abuse of tilidine

### Tilidine

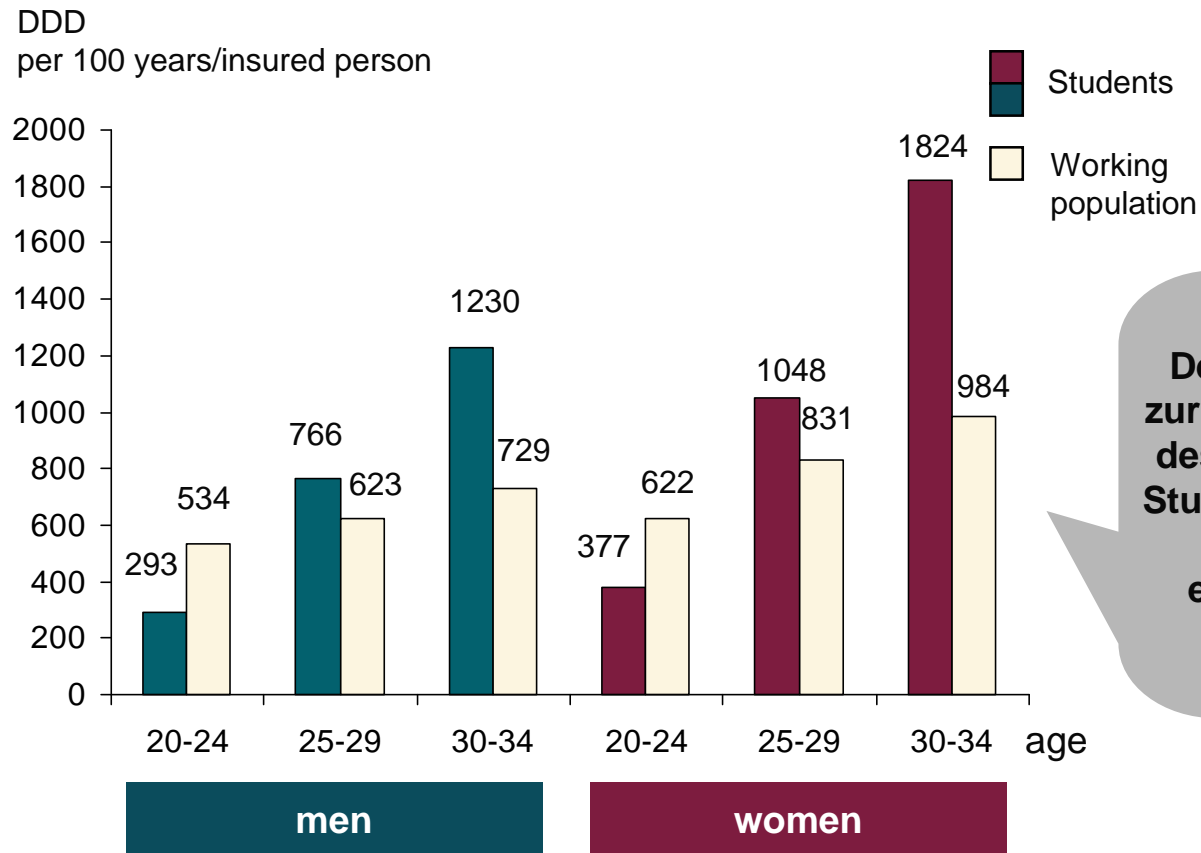
- § Abuse popular
  - § among young Muslim migrants
  - § In the context of outrages
- § Data for proving a connection between the consumption of tilidine and acts of violence still missing

### What is to be done?

- § Sensibilisation of the pharmacists – has already had first effects
- § Integration in the German Narcotics Act

# Students: Alarming consumption of psychotropic drugs

Prescriptions from ATC-group „nervous system“



**Der Medikamentenkonsument zur Therapie von Krankheiten des Nervensystems liegt bei Studenten (Ø 866 DDD/100VJ) deutlich über dem erwerbstätiger Personen (Ø 707 DDD/100 VJ).**

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## Summary

- § Abuse and addiction of drugs is a current international problem. Despite the lack of current data, the magnitude of problem concerning prevalences and the resulting financial burden is considerable.
- § Benzodiazepines and pain relievers continue to account for the largest portions of non-medically used prescription drugs. Furthermore, other major drugs with a high potential for abuse are methylphenidate or weak opioids such as tilidine.
- § The switch to OTC-status of many drugs is of special importance for the rising danger of drug abuse. In this context the abuse of DXM is a current problem.
- § Women continue to be predominantly object to drug addiction, especially with regard to benzodiazepines and psychotropic drugs. Yet an increasingly affected group by drug abuse are teenagers and adolescents.

## Practical implications

- § Promotion of a better vigilance by parents, doctors, pharmacists and the public
- § Systematical control of data regarding the consumption of OTC-drugs by the Federal Institute for Drugs and Medical Devices, sickness funds and criminal offices
- § Introduction of an official registration system for DXM-inquiries
- § Sensibilisation and further education of physicians
- § Programmes regarding the withdrawal and support of affected persons
- § Increased focus to specifically affected groups in the population that haven't been focus of the discussion so far
- § Development of new measures together with the different players
- § Support of a public awareness of the problem by the government
- § Further research regarding the addictive potential of drugs



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