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Contents

Tranquilliser and hypnotic drug use in French children, adolescents and their families

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Objective: **The aims of the study were to compare lifetime frequency of tranquilliser and hypnotic drug use in children and adolescents, and to search for relationships between children's drug use and family patterns regarding drug use.**

Methods: **194 subjects aged 6 to 16 years (110 psychiatric outpatients and 84 paediatric outpatients) and family members (mothers, fathers, siblings in same age range) were assessed regarding lifetime and recent (past 4 weeks) tranquilliser/hypnotic drug use, and recent analgesic and minor sedative/tonic over the counter (OTC) drug use.**

Results: **41 children (37%) attending the psychiatric outpatient clinic had received a psychotropic drug at some stage in comparison to 11 children (13%) attending the general paediatric clinic. There were no statistical differences in relation to psychotropic drug use by the siblings or parents in the two groups. Using multiple logistic regression (both groups combined), the factors most strongly associated with the child's tranquilliser/hypnotic drug consumption were: maternal lifetime psychotropic drug use (*P*=0.02), total duration of maternal psychotropic drug use (*P*=0.017), duration of recent OTC drug use by the child (*P*=0.012), and psychiatric diagnosis in the child (*P*=0.049).**

Conclusions: **Tranquilliser/hypnotic drug use in children and adolescents is not rare, and may be linked to their mothers' own use of psychotropic medicines.**

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Keywords: children – tranquillisers – hypnotics – family – pharmacoepidemiology

Introduction

The use of psychotropic medication has increased considerably in most industrialised countries. In adults, anxiolytic drug use is associated with mental health status and somatic morbidity and socio-economic factors[1-3]. Comorbidity between physical and psychopathological disorders, especially anxiety, is common[4,5]. Additional related factors, at least in Europe, may include easy access to medical care, low sale price, high insurance coverage, workload of physicians, and belated public awareness to the risks induced by benzodiazepine use[3,6]. Most studies have found a higher frequency of anxiolytic and hypnotic drug use in women than in men[2,3]. It has also been shown that spouses of tranquilliser-addicted patients tend to take more of these medicines themselves[7], thus demonstrating environmental and family influences. In children and adolescents, tranquilliser and hypnotic drug use is a crucial issue, because of these drugs' frequent potential for habituation, possible interaction with other drugs, and potential implications for the long-term growth and cognitive development of children[8-10].

The overall percentage of children receiving psychotropic treatment has increased dramatically over recent years[11-17], with a predominance of medication given for off-label indications. This increase includes preschool children[18-19]. One recent study observed significant increases in the use of psychotropic drugs in paediatric psychiatric inpatients from 1991 to 1998: antidepressants (from 35.6% to 77.3%), mood stabilisers (from 14.9% to 32.6%)[16]. However, the extent of psychotropic drug use, especially as regards anxiolytic and hypnotic drugs in childhood and adolescence, remains a controversial topic, and little is known about the determinants of such use.

The main published studies on psychotropic drug use in children and adolescents are summarised in Table 1. Lifetime frequency of use ranges from 16% in preschool children[20] to 21–29% in adolescents[21,22]. Recent use was reported in 12% of

Table 1 Representative studies on psychotropic drug use in children and adolescents

Country	*n*	Age (years)	Assessment	Psychotropic drug use	References
France	1,100	0–18	Interview with mother	16.4% had used psychotropic drugs before age 9 months	20
Canada	331,695	0–20	All prescriptions from Provincial Drug Plan over 5 years	10–14 years: 0.9% were prescribed minor tranquillisers, 0.2% major tranquillisers, 0.08% sedative/hypnotics (per year) 15–19 years: 2.2% were prescribed minor tranquillisers, 0.4% major tranquillisers, 0.6% sedative/hypnotics (per year)	28
USA	341,422	0–17	All prescriptions from Medicaid program over 5 years	5.3% were prescribed psychotropic drugs and 5.5% combinations with psychotropic drugs per year	29
Sweden	1,497	0–5	Register of all prescribed drugs purchased in the two district pharmacies	2% sedative/hypnotics by age 5 years	35
USA	12,320	0–17	National survey of office based practices: psychotropic drug prescription during paediatric visit	Prescription rate per visit: 0.6% (0–3 years); 2% (4–8 years); 2.1% (9–12 years); 2.1% (13–17 years)	31
Germany	90% national population	All ages	National database on drug prescriptions over 1 year	2-3% children and adolescents were prescribed psychotropic drugs	30
France	1,113	12–20	Self-report questionnaire	21.4% lifetime use, 5% current use	22
France	1,020	10–21	Personal interview	60.2% took at least one drug over a week, 48.7% of which were psychotropic drugs	25
France	11,274	6	Interview with parent(s)	12.1% currently used a psychotropic drug	23
France	3,287	12–20	Self-report and parent questionnaires	21.1% had used "drugs for tension or distress" (17.4%) and/or "drugs for sleep disorders" (9.8%) over a year	26
Brazil	14,814	13–18	Self-report questionnaire	29.1% lifetime use	21
Switzerland	376	10–20	Self-report questionnaire	7% over past 15 days, 3% self-prescription	24
France	221	6–16	Parent and adolescent interview	Life use: 22.2% boys, 20.6% girls	33
USA	10,389 in 1987 6,490 in 1996	0–18	National database on drug prescriptions over 9 years. Interview with parent(s)	Significant increases over 9 years from 1987 to 1996: stimulant use (0.6% vs 2.4%), antidepressant use (0.3% vs 1%), co-prescription (0.03% vs 0.23%)	13
USA	9,447	0–18	Connecticut Medicaid managed care administrative and pharmacy data	Lifetime use: 48.2% (stimulant), 23.9% (antidepressant), 9.1% (mood stabiliser), 7.7% (antipsychotic), 5.6% (alpha agonist), 5.6% (anxiolytic)	14
USA	17,670 in 1997 26,677 in 2000	0–17	Database (MarketScan, Medstat, Ann Arbor, Mich)	Lifetime use in 1997 vs 2000: antidepressant (25.0% vs 28.0%), mood stabiliser (5.5% vs 6.2%), sedative/hypnotics (3.9% vs 4.4%)	15
USA	3,114	0–18	The National Survey of Child and Adolescent Well-Being	13.5% of children were taking psychotropic medication	17

6 year old children[23] and 5–7% of adolescents[22,24], although prescription rates were lower[17,20,24]. Adolescent females tend to take more tranquilliser or sedative drugs than adolescent males[22,25-30] and, in some studies, the frequency of drug use appears to increase with age[26,31]. Although psychotropic medicines are usually prescribed, self-medication increases in adolescents.

One factor linked to self-medication may be the chronic use of medicines by another member of the family[25] and, in some community studies on drug use, the idea of *familial risk* has been suggested in adults[7], or in adults and children from the same family[22,32]. One study has identified family characteristics (e.g. maternal illness, sleep or eating problems in a sibling) with the administration of sedatives to infants[20]. Another found that children of working mothers were more likely to receive psychotropic medication than those of non-working mothers[23]. One study found a significant association between child and parental psychotropic medication use[33], although such a relationship has been established for other psychoactive substances (alcohol or illegal drugs), indicating parental role in initiating, maintaining or preventing drug-addictive behaviour in their children[21,34,35].

The aims of the study were: (i) to compare lifetime frequency of tranquilliser and hypnotic drug use in children and adolescents with and without current psychopathological complaints; (ii) to study the links between child or adolescent drug use and socio-demographic variables (sex, age, parents' professional and marital status); (iii) to explore the relationship between drug use in children and adolescents, and family (parents, siblings) use of the same and other types of drugs (analgesics, minor sedative/tonic over the counter [OTC] drugs).

Methods

Sample

Two groups of children and adolescents were recruited consecutively among outpatients of a paediatric hospital (Robert Debré Hospital in Paris): group 1 in the Department of Child and Adolescent Psychopathology and group 2 (controls) in the Department of General Paediatrics. Inclusion criteria were:

- boys or girls aged 6 to 16 years
- at least one parent could be interviewed who was responsible for the child and lived at home with him/her most of the time
- psychiatric diagnosis

In group 2, medical diagnoses with no known effect on psychological functioning (preferably benign diseases) were allowed. The study was approved by the hospital ethics committee. The controls were age matched, consent was signed by parent(s), child, and investigator, and assessment was conducted either before or after the clinic appointment.

Assessment

The investigator recorded information from the parent(s) regarding socio-demographic characteristics of the family and clinical status of the child, including reason for the current medical visit and prior psychiatric treatment, if any. DSM-IV primary diagnosis, assessed for all patients during consensus meetings between staff clinicians, was obtained from the medical record. A structured interview, designed for the study[33], was conducted regarding lifetime and current (past four weeks) tranquilliser and hypnotic drug use, analgesic drug use for the past four weeks, and minor sedative/tonic OTC drug use for the past four weeks. Assessments were made for the child (the outpatient), sibling(s), mother and father. Parents were also asked about other psychotropic drug use (e.g. antidepressants). For the child, recording of drug use covered the period prior to (but not including) current medical treatment in the clinic (if any). For children aged 13 years or over, drug use was recorded from both personal and parental interviews (separate); for younger children, only the parent was the informant. When one parent (usually the father) was not present at the clinic visit, he was subsequently interviewed by telephone.

Questions asked for each subject were the same and in the same order. First, three lists of drugs were handed to the respondent: tranquilliser/hypnotic drugs, analgesics, minor sedative/tonic OTC drugs. Lifetime and current tranquilliser/hypnotic drug use, and analgesic and OTC drug use over the past four weeks, were first rated as yes/no. In cases of psychotropic drug use, additional information was collected regarding: age at first and last use; longest and cumulative duration of use; number and names of drugs; reason and source of prescription. For analgesic and OTC drug consumption, additional questions concerned: name of drugs; cumulative duration of use; reason for use.

The Child Behaviour Checklist (CBCL)[36], a dimensional assessment of child psychopathology translated and validated in French[37], was completed by one parent (usually the mother). Parents also completed the General Health Questionnaire (GHQ), 28 items[38], French version[39] (if one parent was absent, the questionnaire was provided to be returned by mail).

Statistical analysis

Data were analysed on SPSS 6.1 MS Windows. Univariate analyses were performed using χ^2, Yates corrected when necessary, or Fisher exact test for qualitative variables and Student *t* test for quantitative variables. All tests were two-tailed. To explore the relationships between child lifetime psychotropic drug use and other observed child and family characteristics (42 variables), univariate logistic regressions were made in order to extract the best predictors; then, variables significantly associated ($P<0.05$) with child psychotropic drug use were included in a multivariate logistic regression, in order to find the best model.

Results

The study included 194 subjects (110 in the psychiatric group, 84 in the general paediatric group), 187 mothers, 121 fathers, and 119 (out of 120) siblings. Data are missing for 28 fathers and 4 mothers in the psychiatric group, and 30 fathers and 9 mothers in the paediatric group, who were absent on the day of the clinic visit and did not respond to a subsequent telephone interview and/or return the questionnaire by mail.

Socio-demographic and socio-professional characteristics

Both study groups had similar socio-demographic characteristics, except that, in the psychiatric group, there were more boys (56% vs 42% in the paediatric group, $\chi^2=4.11$, $P=0.04$) and more separated families (26% *vs* 13%, $\chi^2=5.20$, $P=0.03$). In the psychiatric group and the paediatric groups, mean (±SD) age (in years) was: for children, 9.8 (±2.7) and 9.7 (±2.6); for siblings, 10.9 (±6.6) and 11.8 (±7.2); for mothers, 38.2 (±5.4) and 39.3 (±5.5); for fathers, 40.8 (±6.6) and 42.4 (±6.4). Distribution for socio-professional status, according to four categories defined by the French Institut National de la Statistique et des Etudes Economiques, showed no significant differences.

Clinical characteristics

The primary diagnoses in the psychiatric group were: attention-deficit/hyperactivity disorder, oppositional defiant disorder or conduct disorder (30% of cases), anxiety disorder (19%), learning disorder (18%), developmental delay (6%), schizophrenia or other psychotic disorder (6%), autism or other pervasive developmental disorder (5%), obsessive-compulsive disorder and/or tic disorder (4%), mood disorder (4%), eating disorder (3%), communication disorder (3%), sleep disorder (3%), motor skills disorder (1%), elimination disorder (1%). In the paediatric group, the diagnoses included: overweight (35%), respiratory tract disorder (18%), bone and joint disease (13%), skin disorder (12%), allergy (7%), gastrointestinal tract disorder (5%), ear nose or throat infection (5%), endocrine disorder (2%), nervous system disorder (2%), and cardiovascular disorder (1%).

On the CBCL, children in the psychiatric group had significantly higher total scores than those in the paediatric group (mean ±SD = 62.5±9.1 *vs* 57.0±8.2, t=4.29, $P=0.001$), and significantly higher scores for all factors except « somatic complaints ». For parents, on the GHQ, there was a trend for a significant group difference regarding mothers total score (mean ±SD = 22.0±1.0 in the psychiatric group *vs* 19.1±1.1 in the paediatric group, t=1,97, $P=0.051$), and no group difference for fathers total score (mean ±SD=18.1±1.2 *vs* 20.1±2.2, respectively, t=0.86, $P=0.39$); mothers from the psychiatric group had significantly higher scores for somatic complaints (6.3±0.4 *vs* 5.2±0.4 in the paediatric group, t=2.09, $P=0.038$).

Children's drug use

As anticipated, lifetime frequency of tranquilliser/hypnotic drug use by children was significantly higher in the psychiatric group (41 children, 37%) than in the paediatric group (11 children, 13%) ($\chi^2=14.19$, $P=0.0017$) (Table 2). There was no difference regarding recent use of tranquilliser/

Table 2 Frequency of drug use by children, siblings and parents

Drug use	Children (*n* = 194)		Siblings (*n* = 119)		Mothers (*n* = 187)		Fathers (*n* = 121)	
	Psychiatric group	Paediatric group	Psychiatric group	Paediatric group	Psychiatric group	Paediatric group	Psychiatric group	Paediatric group
Tranquilliser/hypnotic drug lifetime use	41 (37%)	11 (13%)	10 (14%)	4 (9%)	63 (60%)	41 (50%)	29 (43%)	17 (32%)
Tranquilliser/hypnotic drug use in past 4 weeks	5 (5%)	0 (0%)	0 (0%)	0 (0%)	16 (15%)	14 (17%)	7 (10%)	5 (9%)
Analgesic drug use in past 4 weeks	63 (57%)	51 (61%)	35 (49%)	21 (45%)	73 (70%)	47 (57%)	38 (57%)	24 (44%)
OTC minor sedative/ tonic drug use in past 4 weeks	16 (15%)	5 (6%)	5 (7%)	3 (6%)	24 (23%)	18 (22%)	11 (16%)	4 (7%)

OTC = over the counter

Table 3 Description of children's and siblings' lifetime tranquilliser/hypnotic drug use

Characteristics of drug use		Psychiatric group		Paediatric group	
		Index child (*n*=41)	Siblings (*n*=10)	Index child (*n*=11)	Siblings (*n*=4)
Age at first use (years): median [range]		3 [0.3–15]	1 [0.1–4]	2 [0.02–7]	1 [1–2]
Longest duration of use (days): median [range]		10 [1–180]	13 [1–30]	4 [1–21]	6 [1–15]
Cumulative duration of use (days): median [range]		18 [1–520]	104 [7–720]	7 [2–120]	14 [3–30]
Age at last use (years): median [range]		5 [0.5–15]	3 [1–11]	2 [0.3–7]	1 [1–2]
Number of drugs: median [range]		1 [1–4]	1 [1–3]	1 [1]	1 [1]
Type of drug (%):	neuroleptic	69	100	91	100
	benzodiazepine	11	0	9	0
	other	20	0	0	0
Reason for use (%):	anxiety	15	0	0	0
	sleep at night	76	100	100	100
	other	9*	0	0	0
Source of prescription (%):	general practitioner	45	50	55	50
	paediatrician	38	50	36	25
	psychiatrist	6	0	0	0
	pharmacist	4	0	9	0
	parents	7	0	0	25

* Three cases of motion sickness, one case of dental ache, 1 case of tics

hypnotic drugs (Fisher exact probability = 0.071), analgesics (χ^2=0.23, *P*=0.63) or OTC drugs (χ^2=0.36, *P*=0.56).

Age at first psychotropic drug use was lower than 4 years in each group (Table 3). Duration of analgesic medication, administered for headaches or other somatic complaints, had been longer in the paediatric than in the psychiatric group (mean ±SD = 5.6±1.1 *vs* 3.3±0.3 days, t=2, *P*=0.05). Minor sedative or tonic OTC drugs included vitamins, trace elements, and phytopharmacological agents, and length of use did not differ between groups.

Siblings' drug use

For siblings, the frequency or length of use did not differ between groups for any type of drug (Table 2). In the psychiatric group, lifetime use of tranquilliser/hypnotics was significantly lower in siblings than in the index child (χ^2=11.80, *P*=0.0006) (Table 3).

Parental drug use

Details of the parental use of psychotropic agents are shown in Table 4. There were no group differences regarding lifetime frequency of psychotropic drug use by mothers or by fathers, and no group difference either for any other category of drug use (Table 2). Overall, lifetime frequency of mothers' psychotropic drug use was higher than that of fathers (56% *vs* 38%, χ^2=9.11, *P*=0.002). A similar gender difference was seen for analgesic drugs (64% *vs* 51%, χ^2=5.08, *P*=0.024).

Effect of child and family characteristics on child lifetime tranquilliser/hypnotic drug use

There were no age or sex differences regarding child lifetime tranquilliser/hypnotic drug use and OTC drug use. The frequency of lifetime tranquilliser/hypnotic drug use was not related to parents' socio-professional or marital status in either group.

Table 4 Description of parents' lifetime psychotropic drug use

Characteristics of drug use		Mothers Psychiatric group (*n* = 63)	Mothers Paediatric group (*n*= 41)	Fathers Psychiatric group (*n* = 29)	Fathers Paediatric group (*n* = 17)
Age at first use (years): median [range]		30 [6–50]	31 [10–47]	32 [0.3–44]	35 [5–45]
Longest duration of use (days): median [range]		30 [1–2160]	15 [1–1460]	26 [1–3650]	15 [1–1095]
Cumulative duration of use (days): median [range]		90 [1–2400]	57 [1–2920]	50 [1–6205]	68 [1–1200]
Age at last use (years): median [range]		35 [15–51]	36 [18–50]	33.5 [3–55]	36 [10–53]
Number of drugs: median [range]		1 [1–7]	1 [1–7]	1 [1–6]	1 [1–3]
Types of drug (%):	benzodiazepine	83	93	77	80
	neuroleptic	7	4	14	12
	piperazine	4	3	2	4
	carbamate	3	0	0	4
	antidepressant	2	0	5	0
	antihistamine	1	0	0	0
	anticonvulsant	0	0	2	0
Reason for use (%):	anxiety	43	54	41	50
	sleep at night	38	27	25	50
	depression	18	17	24	0
	other	1	2	10	
Source of prescription (%):	general practitioner	73	81	57	92
	psychiatrist	8	6	13	0
	paediatrician	0	0	4	0
	other professional	16	12	26	8
	parents	3	1	0	0
	self	3	2	1	2

Overall, 11 variables had a significant positive effect ($P<0.05$) on child lifetime tranquilliser/hypnotic drug use: subject group; presence of psychiatric diagnosis; presence of somatic disorder; number of days of previous psychiatric treatment; child OTC drug use; number of days of child OTC drug use; mother's lifetime psychotropic drug use; cumulative number of days of mother's psychotropic drug use; number of psychotropic drugs used by mother; child CBCL total score; mother GHQ total score.

The 11 discriminant variables were included in a logistic regression analysis, with sex and age as covariates. Mother's own lifetime use of psychotropic drugs was the strongest predictor of the child's use of the same type of drugs (OR: 2.81). Other variables had a significant effect: duration of mother's psychotropic drug use, and duration of child's own use of OTC drugs. A current psychiatric diagnosis in the child only increased the risk by 1.13 (Table 5).

Discussion

Reporting drug prevalence estimates solely on prescriptions is imperfect as compliance (concordance) may be poor, especially with psychotropic drugs[3]. The design of the current study differed from most previous reports for the method of investigation (clinician interview) and the type of population studied (treatment seeking population). However, the results are consistent with those of studies in the community using self-report questionnaires. Lifetime psychotropic drug use in the paediatric group (13%) is in the range of psychotropic drug use previously reported (12% in children to 20–29% in adolescents). One third of children in the psychiatric group (37%) had received psychotropic medicines at some stage. These findings are similar to other published data[31].

Age at first use was in most cases younger than 4 years old. Thus, it might be that early psychotropic drug use is linked to early emotional or behavioural difficulties. Alternatively, both later emotional or behavioural difficulties (the reason for current treatment seeking), and early psychotropic drug use were related to common family or other environmental variables. The fact that siblings of psychiatric outpatients did not receive significantly more psychotropic medication than paediatric outpatients may be a reflection of early individual psychopathology in this group of children, although it does not entirely rule out the influence of specific family interactions.

The main objective of our study was to evaluate relationships between child and adolescent psychotropic drug use and family patterns regarding drug use. In the multivariate analysis, the factor most strongly associated with lifetime child's tranquilliser/hypnotic drug use was maternal lifetime psychotropic drug use and the length of this use. These results are also concordant with the conclusions of a study of hypnotics use by young children with sleep disorders, which found higher rates of hypnotic exposure among children whose mothers currently use hypnotics[32]. This suggests that administration of psychotropic drugs to children may be associated with the mother's psychic condition. Indeed, in univariate analysis, child psychotropic drug use was associated with higher maternal scores on the GHQ. More generally, administration of psychotropic drugs to children may be related to the mother's mode of response to her own and, subsequently, others' psychic distress.

The child's tranquilliser/hypnotic drug use was also associated with their own use of OTC minor sedative/tonic drugs. Studies in adults have shown that women are twice as likely to be prescribed psychotropic drugs in ambulatory practice as are men[40-42] and self-medication is more common among women than among men[41,43]. Previous French studies have suggested that the use of psychotropic medicines in adolescents is associated with familial use of psychotropic drugs, depression in the adolescent and previous psychotropic drug use during childhood[25,26]. Psychotropic drug use may be an early "learned" response to psychological distress[25,26]. This could apply to both

Table 5 Effect of child and family characteristics on child lifetime tranquilliser/hypnotic drug use using logistic regression analysis

Variables	B	SE	*P*	Odd ratio [CI]
Constant intercept	–2.9732	0.9079	0.001	
Maternal lifetime use of psychotropic drugs	1.0347	0.4532	0.022	2.81 [1.16–6.84]
Duration of maternal lifetime use of psychotropic drugs (months)	0.0010	0.0004	0.017	1.03 [1.01–1.03]
Duration of child recent use of OTC minor sedative/tonic drug (weeks)	0.0807	0.0323	0.012	1.76 [1.13–2.74]
Psychiatric diagnosis in child	0.1196	0.0608	0.049	1.13 [1.00–1.27]

OTC = over the counter
B = regression parameter
SE = standard error
CI = confidence interval
Model adjustment : $\chi^2 = 52.705$, df = 7, $P=0.0001$

individuals and families. However, even though regression analysis showed maternal use of psychotropic medicines to be a strong predictor, the results should be viewed with caution. The fact that siblings of the children in the psychiatric groups did not have increased risk of receiving such drugs may account for reciprocal and specific mother-child interactions, with parental symptoms influencing children's use, and children's disorders influencing parental use.

In the current study, general practitioners and paediatricians were the main sources of psychotropic drug prescription in children. This had previously been shown in several studies. In school age children and adolescents, self-medication with psychotropic drugs has been reported[30]. Additionally, adults prescribing psychotropic medicines themselves sometimes give these medicines to their own children[23]. The same thing is reported with other medicines whereby parents will pass them on to their child[25].

As in all retrospective clinical interviews, the results may have been biased by the subjects' reluctance to answer or recall difficulties[44]. Information regarding remote periods of time is uncertain, the error being more likely to lead to underestimation[45]. In the present study, parents seemed to have little difficulty answering questions about their children's drug use, but they were often unable to report on their own use during childhood, their reports of drug use usually starting in adolescence. Another limitation of the current study is the sample size, with subgroups of medicated children possibly too small to show significant effects of environmental or clinical characteristics other than those demonstrated to have a significant effect. Of note, the fathers' sample size was about two thirds smaller than the mothers'; had all fathers been interviewed, we may have observed an effect of fathers' drug use although, from evidence in both our and other sources, it would probably have been lower than the effect of mothers' use.

Further consideration should be given to various aspects of drug use in children and adolescents, to adequately reflect the variety of contexts influencing drug utilisation as well as the benefit/risk profile of therapies. A better knowledge of factors associated with tranquilliser/hypnotic drug use in the youth has important implications in terms of both psychopathological and socio-cultural understanding of medication behavioural patterns, and public health research.

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References

1. Ashton H, Golding JF. Tranquillisers: prevalence, predictors and possible consequences. Data from a large United Kingdom survey. Br J Addict 1989, 84:541-546.
2. Woods JH, Katz JL, Winger G. Benzodiazepines: use, abuse, and consequences. Pharmacol Rev 1992;44:151-347
3. Pélissolo A, Boyer P, Lépine JP, Bisserbe JC. Epidémiologie de la consommation des anxiolytiques et hypnotiques en France et dans le monde. Encéphale 1996;22:187-196.
4. Fernandez F, Levy JK. Use of benzodiazepines in the medically ill. In PP Roy-Byrne, DS Cowley (eds). Benzodiazepines in Clinical Practice: Risks and Benefits. Washington, American Psychiatric Press, 1991, pp 177-200.
5. Wells KB, Golding JM, Burnam A. Affective, substance use, and anxiety disorders in persons with arthritis, diabetes, heart disease, high blood pressure, or chronic lung conditions. Gen Hosp Psychiatry 1989;11:320-327.
6. Hardy P, Payan C, Bisserbe JC, Lepine JP. GERMED neuropsychotropics group: Anxiolytic and hypnotic use in 376 psychiatric inpatients. Eur Psychiatry 1999;14:25-32.
7. Legoc I, Féline A, Frébault D, Lebras P, Caquet R. Caractéristiques de la consommation de benzodiazépines chez des patients hospitalisés dans un service de médecine interne. L'Encéphale 1985;11:1-16.
8. Biederman J, Jellinek MS. Psychopharmacology in children. J Clin Psychiatry 1982;43:174-177.
9. Campbell M, Spencer EK. Psychopharmacology in child and adolescent psychiatry: a review of the past five years. J Am Acad Child Adolesc Psychiatry 1988;27:269-279.
10. Uhlenhuth EH, Dewitt H, Balter MB et al. Risks and benefits of long-term benzodiazepines use. J Clin Psychopharmacol 1988;3:161-167.
11. Gadow KD. An overview of three decades of research in pediatric psychopharmacoepidemiology. J Child Adolesc Psychopharmacol 1997;7:219-236.
12. Goodwin R, Gould MS, Blanco C, Olfson M. Prescription of psychotropic medications to youths in office-based practice. Psychiatr Serv 2001;52:1081-1087.
13. Olfson M, Marcus SC, Weissman MM, Jensen PS. National trends in the use of psychotropic medications by children. J Am Acad Child Adolesc Psychiatry 2002;41:514-521.
14. Martin A, Leslie D. Trends in psychotropic medication costs for children and adolescents, 1997-2000. Arch Pediatr Adolesc Med 2003;157:997-1004.
15. Martin A, Van Hoof T, Stubbe D, Sherwin T, Scahill L. Multiple psychotropic pharmacotherapy among child and adolescent enrolees in Connecticut Medicaid Managed Care. Psychiatr Serv 2003;54:72-77.
16. Najjar F, Welch C, Grapentime WL et al. Trends in psychotropic drug use in a child psychiatric hospital from 1991-1998. J Child Adolesc Psychopharmacol 2004;14:87-93.
17. Raghavan R, Zima BT, Andersen RM et al. Psychotropic medication use in a national probability sample of children in the child welfare system. J Child Adolesc Psychopharmacol 2005;15:97-106.

18. Minde K. The use of psychotropic medication in preschoolers: some recent developments. Can J Psychiatry 1998;43:571-575.
19. Zito JM, Safer DJ, dosReis S et al. Trends in the prescribing of psychotropic medications to preschoolers. JAMA 2000;283:1025-1030.
20. Choquet M, Davidson F. Les facteurs favorisant l'administration de sédatifs chez les nourrissons et leur signification. Archives Françaises de Pédiatrie 1978;35:785-792.
21. Carvalho V, Pinsky I, De Souza e Silva R, Carlini-Cotrim B. Drug and alcohol use and family characteristics: a study among Brazilian high-school students. Addiction 1995;90:65-72.
22. Salines G. Consommation de tabac, d'alcool, de médicaments psychotropes et de drogues illicites chez les lycéens du département de Haute-Pyrénées en 1989. Rev Epidémio Santé Publ 1991;39:149-155.
23. Kopferschmitt J, Meyer P, Jaeger A, Mantz JM, Roos M. Troubles du sommeil et consommation de médicaments psychotropes chez l'enfant de 6 ans. Rev Epidem Santé Publ 1992;40:467-471.
24. Jacquier F, Buclin T, Diezi J. Self medication by the adolescent. Schweiz Med Wochenschr 1998;128:203-207.
25. Lapeyre-Mestre M, Lebret-Bories E, Charlet JP, Montastruc JL, Montastruc P. Consommation de médicaments dans une population de sujets d'âge scolaire. Thérapie 1991;46:49-53.
26. Ledoux S, Choquet M, Manfredi R. Self-reported use of drugs for sleep or distress among French adolescents. J Adolesc Health 1994;42:495-502.
27. Pedersen W, Lavik NJ. Adolescents and benzodiazepines: prescribed use, self-medication and intoxication. Acta Psychiatr Scand 1991;84:94-98.
28. Quinn DMP. Prevalence of psychoactive medication in children and adolescents. Can J Psychiatry 1986;31:575-580.
29. Ray WA, Schaffner W, Ferderspiel CF. Differences between female and male children in the receipt of prescribed psychotropic and controlled-analgesic drugs. Med Care 1986;24:801-813.
30. Elliger TJ, Trott GE, Nissen G. Prevalence of psychotropic medication in childhood and adolescence in the Federal Republic of Germany. Pharmacopsychiatry 1990;23:38-44.
31. Kelleher KJ, Hohmann AA, Larson DB. Prescription of psychotropics to children in office-based practice. Am J Dis Child 1989;143:855-859.
32. Hong SH, Shepherd MDP. Psychosocial and demographic predictors of pediatric psychotropic medication use. Am J Health Syst Pharm 1996;15:1934-1939.
33. Pélissolo A, Gourion D, Notides C et al. Familial factors influencing the consumption of anxiolytics and hypnotics by children and adolescents. Eur Psychiatry 2001;16:11-17.
34. Pandina RJ, Johnson V. Familial drinking history as a predictor of alcohol and drug consumption among adolescent children. J Stud Alcohol 1989;50:245-253.
35. Rasmussen F, Smedby B. Life table methods applied to use of medical care and of prescription drugs in early childhood. J Epidemiol Community Health 1989;43:140-146.
36. Achenbach TM, Edelbrock CS. Manual for the Child Behavior Checklist and revised Child Behavior Profile. Burlington VT: University of Vermont Department of Psychiatry, 1983.
37. Fombonne E, Chehdan F, Carradec A et al. The Child Behavior Checklist: un instrument pour la recherche en psychiatrie de l'enfant. Psychiatr Psychobiol 1988;3:409-418.
38. Golberg DP, Hillier VF. A scale version of the General Health Questionnaire. Psychol Med 1979;9:139-145.
39. Pariente P, Lépine JP, Ha C, Lellouch J. Self-reported psychotropic drug use and associated factors in a French community sample. Psychol Med 1992;22:181-190.
40. Cafferata GL, Kasper J, Bernstein A. Family roles, structure, and stresses in relation to sex differences in obtaining psychotropic drugs. J Health Soc Behav 1983;24:132-143.
41. Cottler LB, Robins LN. The prevalence and characteristics of psychoactive medication use in a general population study. Psychopharmacol Bull 1983;19:746-757.
42. Wells KB, Kamberg C, Brook R, Camp P, Rogers W. Health status, sociodemographic factors and the use of prescripted psychotropic drugs. Med Care 1985;23:1295-1306.
43. Menard G, Allain H, Le Roho S, Morel G, Beneton C. Enquête d'un jour en officine sur la consommation d'antalgiques et d'antipyrétiques. Therapie 1993;48:263-267.
44. Murray J, Dunn G, Williams P, Tarnopolsky A. Factors affecting the consumption of psychotropic drugs. Psychol Med 1981;11:551-560.
45. Parry HJ, Balter MB, Mellinger GD et al. National patterns of psychotherapeutic drug use. Arch Gen Psychiatry 1973;28:769-783.

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