

A Naturalistic Study of Neuroleptic Medication Prescription in Egyptian Hospitalized Children and Adolescents

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ABSTRACT

Patterns of prescription of neuroleptic medication to all consecutive psychiatrically disturbed children and adolescents admitted to a psychiatric institution in Cairo during a 5-year period (1982 - 1986) were studied and analyzed.

Data are presented with respect to the relationship of prescription of medication to sex, diagnosis, types, potency and dosages of neuroleptics used. The trend toward favoring certain types of neuroleptic and variation in the dosage used is reported with examination of our findings in the light of previous literature of child and adolescent psychopharmacology.

INTRODUCTION

Childhood and adolescence represent a unique phase of biopsychosocial development. Recent studies showed profound changes in the development of brain neuronal systems at the onset of puberty (Gittelman-Klein *et al.* 1978). Psychopharmacology in child and adolescent psychiatric disorders lags far behind that of adults.

Campbell and Spencer (1988) pointed out that there is a striking dearth of substantive clinical research concerning adolescent psychopharmacology. In addition, information about guidelines for the use of psychoactive drugs in children is far from satisfactory.

Drug guidelines reflect the limited nature of the available psychopharmacological data which differs from culture to culture. For example, while some health care systems prohibit the use of adult doses of neuroleptics in children and adolescents, some authors suggest that, in fact, youngsters could tolerate high doses of psychoactive drugs and recommend a liberal attitude (Koplan, 1984).

To determine the pattern of use of neuroleptics in hospitalized Egyptian psychiatric children and adolescents, we investigated all the psychoactive medications

prescribed for those aged 18 years and younger who were admitted during a 5-year period.

There were two main questions to be answered. The first was concerned with the relative indications for the use of different types of neuroleptics. The second was concerned with the description of different doses used for different psychiatric disorders.

MATERIAL AND METHOD

The psychiatric records of children and adolescents admitted to Dar El-Mokattam Hospital for Mental Health during a 5-year period (starting from the first of January 1982 to the end of December, 1986) were reviewed.

Data obtained included age, sex, length of stay, number of previous psychiatric hospitalizations and diagnoses according to the Egyptian Diagnostic Manual of Psychiatric Disorders-DMP-I (Egyptian Psychiatric Association, 1975). Medication data included the types of psychoactive medications, particularly neuroleptics prescribed and dosages. Dosages of neuroleptics were described in the form of means ($\pm$ SD) of high and/or low potency, total

(or both) and maximum dose reached during treatment. Dosage of all types of neuroleptics were expressed in mg Eq. to chlorpromazine (Glenberg, 1984).

RESULTS

Of the 116 case records reviewed, 110 (95%) patients have received neuroleptic medication. The six patients who did not receive neuroleptic medication included two patients with myasthenia gravis one patient with hysterical conversion, one patient with substance abuse, one patient had received only antiepileptic medication and another patient received antiepileptic plus antidepressant medication.

Table (1) shows the distribution of patients, whether they have received psychoactive medication or not by age, sex, and length of stay.

Table (2) shows the distribution of patients according to the diagnostic categories and the number of neuroleptics prescribed. The other diagnoses included four patients

with mental retardation, three patients with catatonia, two patients with epilepsy, the two patients with myasthenia gravis, one patient with Gille de la Tourette syndrome and one patient was undiagnosed.

Of the 110 patients who received neuroleptics, 82 patients (75%) have concomitant prophylactic antiparkinsonian medication, six patients (5%) have received both neuroleptic and antidepressant medications and sixteen patients (15%) have had both antiparkinsonian and antidepressant medications in addition to their neuroleptic regimen.

Table (3) shows the percentage of use of different types of neuroleptics in relation to diagnosis.

Table (4) shows the dosages of neuroleptics, mean ($\pm$ SD), in relation to diagnosis and sex. In general, patients with mania have received the highest doses among other diagnostic categories. While there seems to be close similarities in the doses of male and female manic patients, male patients with M-D, mixed have received al-

TABLE I
Use of Psychoactive Medication: Age and Sex Distribution

	Male		Female		Total	
	Yes	No	Yes	No	Yes	No
Medication	Yes	No	Yes	No	Yes	No
Variable						
Number	70	1	44	1	114	2
Age range (years)	9-18	17	14-18	17	9-18	17
Mean age (years)	16.5	-	16.3	-	16.5	17
Length of Stay	5-270	12	3-195	1	3-270	1-12
(range in days)						
Mean length of	28.6	-	27.4	-	28	6.5
stay (days)						

TABLE II

Use of Neuroleptic Medication: Relationship between Diagnostic Categories and the Number of Neuroleptics Prescribed

Diagnosis	Number of patients				Number of Neuroleptics (NL) *					
	Male	Female	Total	%	One		Two		>Two	
					N	%	N	%	N	%
Schizophrenia	19	5	24	20.7	3	2.9	21	18.9	-	-
Acute Psychosis	8	10	18	15	2	1.9	16	14.5	-	-
Manic-Depressive										
Psychoses	26	14	40	43.8	4	3.8	34	31.2	2	1.9
Mania	19	11	30	35.8	2	1.9	26	23.7	2	1.9
Depression	4	0	4	3.5	1	1	3	2.9	-	-
Mixed	3	3	6	5.5	1	1	5	4.7	-	-
Behavior Disord.	8	5	13	11.3	7	6.5	5	4.7	-	-
Hysterical Conv.	3	5	8	6.9	4	3.8	2	1.9	-	-
Other Diagnos.**	7	6	13	11.3	3	2.9	7	6.3	-	-
Total	71	45	116	100	23	20.9	85	77.3	2	1.9

* NL= Neuroleptic, for 110 patients

** Six patients did not receive neuroleptic medication.

TABLE III
*Percentages of Different Types of Neuroleptics
 Used in Relation to Diagnosis*

Neuroleptic Diagnosis	Chlorp- omazine	Thiorid- azine	Trifluo- perazine	Perphe- nazine	Clorpr- othixene	Halo- peridol
Schizophrenia	79%	29.1%	33.3%	4.1%	4.1%	70.8%
Acute Psychosis	66%	16.6%	11.1%	5.5%	-	72.2%
Mania	70%	33.3%	6.6%	6.6%	3.3%	86.6%
Depression	50%	50%	-	50%	-	25%
M-D, Mixed	83.3%	16.6%	-	-	-	83.3%
Behavior Disord.	46.1%	23%	15.3%	7.6%	-	46.1%
Hysterical Conv.	37%	12.5%	25%	12.5%	37.6%	-
Other Diagnoses	30.7%	30.7%	23%	-	-	53.8%

most twice that of female patients with the same diagnosis. High-potency neuroleptics were used in doses as much as two or three times higher than the doses of low-potency neuroleptics.

Combinations of high- and low-potency neuroleptics (77.3%) appeared to be favoured rather than the use of a single anti-psychotic (20.9%). Haloperidol and chlor-

promazine appeared to be the most favoured high- and low-potency neuroleptics in our psychiatric inpatients. Maximum daily dosages of neuroleptics were highest for mania, and almost similar for schizophrenia, acute psychosis and mixed manic-depressive psychosis.

TABLE IV

*Means ($\pm$ SD) of Dosages (in Mg.Eq.Chlorpromazine of Neuroleptics)
in Relation to Diagnosis and Sex*

Diagnosis.	Mg.Eq. Chlorpromazine	High	Low	Total	Maximum
		Potency	Potency	dose	daily dose
		mg/day	mg/day	mg/day	mg/day
Schizophrenia		543 ($\pm$ 200)	176 ($\pm$ 132)	669 ($\pm$ 313)	744 ($\pm$ 355)
Male		549 ($\pm$ 194)	195 ($\pm$ 133)	674 ($\pm$ 306)	766 ($\pm$ 365)
Female		508 ($\pm$ 223)	62 ($\pm$ 28)	570 ($\pm$ 197)	605 ($\pm$ 242)
Acute psychosis		499 ($\pm$ 241)	174 ($\pm$ 138)	625 ($\pm$ 341)	734 ($\pm$ 389)
Male		446 ($\pm$ 300)	176 ($\pm$ 135)	555 ($\pm$ 412)	605 ($\pm$ 439)
Female		537 ($\pm$ 180)	172 ($\pm$ 140)	680 ($\pm$ 258)	838 ($\pm$ 258)
Mania		691 ($\pm$ 217)	276 ($\pm$ 122)	894 ($\pm$ 358)	1003 ($\pm$ 456)
Male		679 ($\pm$ 248)	261 ($\pm$ 105)	871 ($\pm$ 359)	994 ($\pm$ 505)
Female		732 ($\pm$ 123)	301 ($\pm$ 144)	935 ($\pm$ 343)	1018 ($\pm$ 353)
Depression		342 ($\pm$ 203)	100 ($\pm$ 0)	356 ($\pm$ 230)	356 ($\pm$ 230)
Male		342 ($\pm$ 203)	100 ($\pm$ 0)	356 ($\pm$ 230)	356 ($\pm$ 230)
Female		-	-	-	-
M-D, Mixed		660 ($\pm$ 317)	217 ($\pm$ 126)	757 ($\pm$ 422)	790 ($\pm$ 387)
Male		875 ($\pm$ 125)	300 ($\pm$ 100)	1175 ($\pm$ 225)	1175 ($\pm$ 225)
Female		446 ($\pm$ 305)	162 ($\pm$ 110)	479 ($\pm$ 263)	533 ($\pm$ 225)
Behavioral Disorders		252 ($\pm$ 107)	166 ($\pm$ 151)	285 ($\pm$ 185)	314 ($\pm$ 188)
Male		319 ($\pm$ 82)	265 ($\pm$ 141)	362 ($\pm$ 182)	371 ($\pm$ 203)
Female		185 ($\pm$ 84)	48 ($\pm$ 15)	186 ($\pm$ 106)	231 ($\pm$ 93)
Hysterical Conversion		410 ($\pm$ 290)	25 ($\pm$ 14)	191 ($\pm$ 285)	232 ($\pm$ 367)
Male		-	15 ($\pm$ 0)	15 ($\pm$ 0)	15 ($\pm$ 0)
Female		410 ($\pm$ 290)	27 ($\pm$ 14)	191 ($\pm$ 285)	232 ($\pm$ 367)
Other Diagnoses		494 ($\pm$ 173)	103 ($\pm$ 49)	496 ($\pm$ 224)	526 ($\pm$ 221)
Male		450 ($\pm$ 179)	70 ($\pm$ 20)	426 ($\pm$ 206)	444 ($\pm$ 206)
Female		583 ($\pm$ 118)	147 ($\pm$ 41)	660 ($\pm$ 173)	717 ($\pm$ 103)

DISCUSSION

The naturalistic type of our study being a retrospective descriptive one has allowed us to investigate the pattern of neuroleptic prescription in a large sample of children and adolescents with different diagnostic presentations. We are not aware of similar reports in the Egyptian psychiatric literature and to our knowledge this is the first study to document and report neuroleptic use in such a population in Egypt. However, the limitation in our investigation precludes generalization. Our sample includes patients in a wide age range (9 - 18 years) and we were not able to address the issue of biologic staging (i.e. Tanner Staging). Also, the assessment of psychopathology and target behaviours in our population was left to the second stage of this study.

Our finding that the majority of patients (77.3%) have been receiving two types of neuroleptics (high and low potency) might be considered a polypharmacy in some drug guidelines. In addition, the initial prophylactic use of antiparkinsonian medication has been discouraged (Campbell *et al.* 1983). However, recent studies have documented and suggested that initial prophylaxis with antiparkinsonian treatment is beneficial in reducing extrapyramidal side effects particularly in children and adolescents (Polizos *et al.* 1973). Furthermore, recent evidences suggest that low potency neuroleptics might have high anticholinergic properties that simulate an inbuilt antiparkinsonian effect and is safer in children and adolescents than high potency neuroleptics (Snyder *et al.* 1974).

Haloperidol and chlorpromazine were the most favored combination and rank first in treating psychotic disorders, with haloperidol slightly preferred in mania (86.6%) and acute psychosis (72.2%) and chlorpromazine in schizophrenia (79%) and depression (50%). Both medications were equally used in behavioural disorders (46%) and manic depressive psychosis, mixed type (50%).

Investigators in the area of psychopharmacology of children and adolescents have

reported similar figures to ours. For example, Wiener (1982) reported that in pediatric psychiatry chlorpromazine was used in 40% of children with depression and in 44.5% in psychosis (60% in our study). Also figures of use of thioridazine and chlorpromazine (53%) are not dissimilar to ours (46.1%) in behavioural disorders.

The use of haloperidol and chlorpromazine in controlling psychotic behaviour and manic symptoms has been recommended in child and adolescent psychopharmacology (Breuning, 1983; Biederman and Jellinek, 1984).

On the other hand, the dosages used in our population appear slightly higher than those reported in similar age groups. For example, reports of dosages used varied from 160 mg in delinquent boys to 400 mg in predelinquent behaviour disorders, and 490-612 mg in schizophrenics (Gittelman-Klein *et al.* 1980). Chiles (1978) administer up to 90 mg to adolescents with personality disorder, and Serrano (1981) and Jorgensen (1979) up to 689 mg (± 310) Eq. to chlorpromazine. However, Jorgensen (1979) in a review of psychopharmacological management of psychotic disorders in children and adolescents suggested that schizophrenia and manic-depressive psychosis in such population are treated as in adult. Also, Pool *et al.* (1976) and Chiles (1978) have used high-potency neuroleptics up to 1500 mg (Eq to chlorpromazine) to treat psychotic adolescents.

The use of antipsychotic medication is useful in nonpsychotic adolescents with symptoms of anxiety and overaggressiveness (Pool *et al.* 1976). This is supported by our findings that in our sample all patients with behaviour disorders (11.3%) and three fourths of patients with hysterical conversion have been prescribed neuroleptics. It is possible that the use of antipsychotic medication in these groups of patients has been based on the conception that severe thought disorder could accompany aggressive behavioural disorders and that in cases that show affective symptoms or significant anxiety and/or depression, neuroleptics are expected to be helpful and

favorable. However, in the light of the risk of this young population to develop long-term side effects, as tardive dyskinesia, the use of these neuroleptics to non-psychotic population should be restricted and other therapeutic approaches be encouraged.

As Wiener (1983) and Sokol (1988) have pointed out, we agree that the study of psychopharmacology of children and adolescents has provided many heuristic observations and few clinically meaningful guidelines. The therapist must be willing to be an optimistic empiricist, always hoping to find a moderate degree of improvement, not a miraculous cure.

Future research should investigate, prospectively, the factors that control neuroleptic prescription in psychiatrically disturbed children and adolescents in relation to the specific diagnoses.

REFERENCES

- Biederman, J. and Jellinek, M. S. (1984) Psychopharmacology in children. *New England J. Med.*, **310**: 468-972.
- Breuning, S. E., Ferguson, D. G., Davidson, N. A. and Poling, A. D. (1983) Effects of thioridazine on the intellectual performance of mentally retarded drug responders and nonresponders. *Arch. Gen. Psychiat.*, **40**: 309-313.
- Campbell, M. and Spencer, E. K. (1988) Psychopharmacology in child and Adolescent Psychiatry: A review of the past five years. *J. Amer. Acad. Child. Adolescent Psychiat.*, **27**: 269-279.
- Campbell, M., Green, W. H. and Deutch, S. I. (1985) *Child and Adolescent Psychopharmacology*. Beverly Hills: Sage Publications.
- Campbell, M., Grega, D. M. Green, W. H. and Bennett, W. G. (1983) Neuroleptic-induced dyskinesia in children. *J. Clin. Neuropharmacol.*, **6**: 207-222.
- Chiles, J. (1978) Extrapyramidal reactions in adolescents treated with high-potency antipsychotics. *Amer. J. Psychiat.*, **135**: 239-340.
- Egyptian Psychiatric Association (1975) *Diagnostic Manual of Psychiatric Disorders-DMP-I*. Cairo: The Association.
- Gelenberg, A. J. (1984) Psychoses. In Bassuk, E. L., Schoonover, S. C. and Gelenberg, A. J. (eds.), *The Practitioner's Guide to Psychoactive Drugs*. New York: Plenum.
- Gittelman-Klein, R. (1980) Diagnosis and drug treatment of childhood disorders. In Klein, D. F., Gittelman, R., Quitkin, F., Rifkin, A. (eds.), *Diagnosis and Drug Treatment of psychiatric Disorders*. 2nd ed. Baltimore: Williams & Wilkins.
- Gittelman-Klien, R., Spitzer, R. L., Cantwell, D. (1978) Diagnostic classification and psychopharmacological indications. In Werry, J.S. (ed.), *Pediatric Psychopharmacology*. New York: Brunner-Mazel.
- Jorgensen, O. S. (1979) Psychopharmacological treatment of psychotic children. *Acta Psychiat. Scand.*, **59**: 229-238.
- Koplan, C. R. (1984) Pediatric psychopharmacology. In Bassuk, E. L., Schoonover, S. C. and Gelenberg, A.J. (eds.), *The Practitioner's Guide to Psychoactive Drugs*. New York: Plenum.
- Polizos, P., Engelhardt, D. M., Hoffman, S. P. and Waizer, J. (1973) Neurological consequences of psychotropic drug withdrawal in schizophrenic children. *J. Autism Child. Schizop.*, **3**: 247-53.
- Pool, D., Bloom, W., Mielke, D. H., Roniger, J. J. and Gallant, D. M. (1976) A controlled evaluation of loxitane in seventy-five adolescent schizophrenic patients. *Current Therapeutic Research Clinical and Experimental*, **19**: 99-104.
- Serrano, A. C. (1981) Haloperidol : Its use in children. *J. Clin. Psychiat.*, **42**: 154-156.
- Snyder, S. H., Banerjee, S. P., Yamamura, H. I. and Greenberg, D. (1974) Drugs, neurotransmitters and schizophrenia. *Science*, **184**: 1243-53.
- Sokol, M. S. (1988) Novel psychoactive agents in the treatment of developmental disorders. In Aman, M. G. and Singh, N.N. (eds.), *Psychopharmacology of the Developmental Disabilities*. New York: Springer-verlag.
- Wiener, J. M. (1982) Psychotropic drug therapy in children and adolescents. *Psychosomatic*, **23**: 288-295.

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ABSTRAIT

Une Étude Naturaliste de la Prescription des Médicaments Neuroleptiques aux Enfants et aux Adolescents Hospitalisés

Des modèles de la prescription des médicaments neuroleptiques pour tous les enfants et les adolescents psychiatriquement dérangés admis pour une période de 5 ans dans une institution au Caire de (1982 à 1986), ont été étudiés et analysés.

En se basant sur les données, nous avons tenu compte de la relation entre la prescription du médicament et le sexe, le diagnostic, les types, la capacité et les doses des neuroleptiques utilisés.

Le fait de favoriser certains types de neuroleptiques et de varier les dosages utilisés, revient à nos trouvailles, basées sur la littérature de la psychopharmacologie des enfants et des adolescents.

الموجز

دراسة واقعية لوصف المهدئات العظمية للأطفال والمراهقين المصريين داخل مستشفى للأمراض النفسية

الهدف من هذه الدراسة هو تحليل بعض أنماط وصف المهدئات العظمية للأطفال والمراهقين المصريين الذين يعانون من أمراض نفسية ويعالجون داخل المستشفى ، ولتحقيق ذلك قمنا بفحص ملفات كل من يبلغ عمرهم ١٨ عاما فأقل وسبق أن عولجوا داخل إحدى المستشفيات الخاصة في القاهرة ، وذلك في فترة خمس سنوات (١٩٨٢-١٩٨٦) ، حيث بلغ عددهم ١١٠ مريضا . وقد تم عرض العلاقة بين وصف هذه المهدئات وكل من الجنس والتشخيص وأنواع العقاقير وقوتها وجرعاتها ، كما تم عرض الاتجاه الغالب من حيث تفضيل أنواع معينة من المهدئات العظمية ومدى التنوع في الجرعات الموصوفة ، وقد قمنا بمناقشة النتائج في ضوء التراث الذي يتناول علاج الاطفال والمراهقين عن طريق العقاقير النفسية .