



THE AGA KHAN UNIVERSITY

eCommons@AKU

Department of Paediatrics and Child Health

Division of Woman and Child Health

January 1997

Paediatric prescribing in Karachi

S Q. Nizami

Aga Khan University, qamaruddin.nizami@aku.edu

I A. Khan

Aga Khan University, iqtidar.khan@aku.edu

Z A. Bhutta

Aga Khan University, zulfiqar.bhutta@aku.edu

Follow this and additional works at: https://ecommons.aku.edu/pakistan_fhs_mc_women_childhealth_paediatr



Part of the [Pediatrics Commons](#)

Recommended Citation

Nizami, S. Q., Khan, I. A., Bhutta, Z. A. (1997). Paediatric prescribing in Karachi. *Journal of Pakistan Medical Association*, 47(1), 29-32.

Available at: https://ecommons.aku.edu/pakistan_fhs_mc_women_childhealth_paediatr/572

Paediatric Prescribing in Karachi

Pages with reference to book, From 29 To 32

S.Q. Nizami, I.A. Khan, Z.A. Bhutta (Department of Paediatrics, The Aga Khan University, Karachi.)

Abstract

To assess amount of drug overuse we studied drug prescribing for common childhood problems by 65 general practitioners (GPs) and 29 paediatricians. A total of 2433 encounters between GPs or paediatricians and children under five years of age were observed. The presenting complaints were fever in 18%, cough in 9%, both fever and cough in 21%, vomiting in 20% and diarrhoea in 41% of encounters. Antibacterials were prescribed in 49% of encounters, analgesics and antipyretics in 29%, antiemetics in 8% and injectables in 15%. Antidiarrhoeals were prescribed in 41% encounters with children reported to have diarrhoea. Ampicillin and cotrimoxazole were the two common antibacterials prescribed by both GPs and paediatricians. Antibacterials were prescribed in significantly larger number of encounters with GPs than in those with paediatricians. Mean encounter time of patients with GPs was 3.4 ± 2.7 minutes and with paediatricians 9.7 ± 4.1 minutes. (JPMA 47:29, 1997).

Introduction

Irrational and excessive use of drugs is a world-wide problem both in developed and developing countries¹⁻⁷. World production of drugs was estimated to be over US\$ 100 billion⁸. About 79% of these drugs are used in developed world whose population is only 26% of total world population, whereas, only 21% of these drugs are used in developing countries with 74% of total world population⁸. In Pakistan, total annual expenditure on drugs was US\$ 547 million in 1990, of which US\$ 120 million were spent on antibiotics alone⁹.

Although it is extremely difficult to assess irrational and excessive prescribing of drugs by practitioners, but evaluation of their prescribing practices using INRUD criteria¹⁰ can give an estimate of irrational and excessive prescribing of drugs. In most studies, drug prescribing at public health facilities has been investigated¹¹, but rarely at private practitioners level. In Pakistan, public health system including primary care centres to tertiary care hospitals are providing free treatment but private sector is also very active in providing medical care to population both through private hospitals and individual practices. This private sector is not under any legislative or other administrative control to prescribe or dispense drugs. Although it is possible to monitor and control excessive use of drugs through administrative and legislative measures and peer review of prescribing practices at government controlled health facilities and hospitals¹² but may not be so at level of private practitioners. In Pakistan, Akhtar (unpublished data) reported high prescribing rate of antibiotics and injections by GPs from Peshawar, but we could not find any other study in literature describing and comparing drug prescribing trends of GPs and paediatricians for children in Pakistan.

Since prescription of unnecessary medications may contribute to childhood morbidity and mortality, we conducted a study to investigate prescribing practices of GPs and Paediatricians in Karachi. Specifically, we investigated the common childhood problems encountered and frequency of various drugs prescribed by them. We also looked at, if there are differences between GPs and paediatricians in problems encountered by them and in their drug prescribing behaviour.

Methods

The study was done in Karachi during April, 1992 to December, 1992. In absence of any available data describing differences between GPs and paediatricians and using our best judgement, we presumed a difference of 30% in their drug prescribing behaviour. Using computer programme EPI-Info (version 5.0 CDC/WHO, April 1990), we needed thirty paediatricians and seventy-five GPs in order to show this difference of 30% in their prescribing behaviour at a confidence level of 0.05 and power of 0.8. Considering refusal and/or dropouts, we selected forty-one paediatricians and ninety-four GPs. Using random number table paediatricians were selected from a list obtained from Pakistan Paediatric Association and GPs were selected from a list of 2000 practitioners obtained from a drug company. This was done because no organization or association maintains any register of practicing GPs and their addresses of practices. Ninety-four GPs and 41 paediatricians were selected for observation of their practice, 15 GPs and 11 paediatricians refused to participate in study. Another 13 GPs and one paediatrician refused to allow their practice to be observed after their initial consent to participate in the study. Thus, practice of only 65 GPs and 29 paediatricians could be observed. Practice of selected practitioners was observed daily for 3-4 hours during peak hours of their practice for 5-6 days over a week. The observers were graduate in sociology from Karachi University and trained by us specially for observing prescribing practices and recording relevant information for the study. Four observers were trained during one month of pilot study by observing practices of a group of practitioners (not included in this study) and evaluating their daily performance and correcting their mistakes. These observers were then allowed to sit in the offices or clinics of practitioners selected for study after obtaining their consent by research medical officer. To reduce the effect of presence of an observer on prescribing practice, these practitioners were told that the study is aimed towards collecting data about magnitude of paediatric problems faced and solved by them. Data collection forms designed for study were seen and accepted by them and data was recorded by observers in their presence without any interference. The information was recorded about the qualification and duration of practice of the observed practitioners, age and sex of child, presence or absence of fever, cough, diarrhoea etc, their duration, other presenting complaints, encounter time and drugs dispensed or prescribed. No questions were asked from practitioner about diagnosis or reason to prescribe drugs.

The data so obtained was coded, entered into computer and analysed using computer programme EPI-Info version 5.01 (CDC/WHO). Categorical data are presented as frequency distributions and compared by chi-square test and continuous data are presented as means with standard deviations compared using student t-test.

Results

Study population is shown in Table I.

Table I. Study population.

	GPs No. (%)	Paediatricians No. (%)
No of practitioners	65 (69)	29 (31)
Qualification of Practitioners		
MBBS	59 (91)	0 (0)
MCPS/DCH	6 (9)	24 (83)
FCPS/MRCP/DABP	0 (0)	5 (17)
Duration of Practice		
<5 years	12 (18)	3 (10)
5-10 years	20 (31)	2 (7)
>10 years	33 (51)	24 (83)
No. of encounters with diarrhoea	613 (37)	383 (48)
No. of encounters without diarrhoea	1026 (63)	411 (52)
Total No. of encounters	1639 (100)	794 (100)
Mean No. of encounters per practitioner	25±15	27±18
Mean encounter time	3.4±2.7	9.7±4.1

MBBS = Bachelor of Medicine, Bachelor of Surgery

MCPS = Member of College of Physicians & Surgeons

DHC = Diploma in child health

FCPS = Fellow of College of Physicians & Surgeons

MRCP = Member of the Royal College of Physicians

DABP = Diplomate American Board of Paediatricians

A total of 1639 encounters with 65 GPs and 794 encounters with 29 paediatricians by children under five years of age were observed. Mean number of encounters with GPs was 25±15 and with paediatricians was 27±18. Out of sixty-five GPs, six (9%) had obtained MCPS in medicine or other subjects but were practicing as general practitioners, 61% of all practitioners were practicing for not more than 10 years. Mean encounter time with GPs was three minutes and with paediatricians 10 minutes. Problems presented to these practitioners are shown in Table II.

Table II. Presenting problems encountered by GPs and paediatricians.

	GPs No. (%)	Paediatricians No. (%)	Total No. (%)
No. of encounters	1639	794	2433
Fever with or without other major complaints	1021 (62)	404 (51)	1425 (59)
Fever only (without cough or diarrhoea)	321 (20)	113 (14)	434 (18)
Cough only (without fever or diarrhoea)	158 (10)	66 (8)	224 (9)
Fever and cough (both without diarrhoea)	385 (23)	116 (15)	501 (21)
Diarrhoea without fever and cough	253 (15)	170 (21)	423 (17)
Diarrhoea with fever and cough	360 (22)	213 (27)	573 (23)
Problems in addition to fever, cough and diarrhoea			
- Vomiting	281 (17)	199 (25)	480 (20)
- Cold	214 (13)	88 (11)	302 (12)
- Pain (chest, abdomen etc)	92 (6)	38 (5)	130 (5)
- Respiratory problems	93 (6)	29 (4)	122 (5)
- Throat problems	58 (4)	24 (3)	82 (3)
- Skin problems	81 (5)	28 (4)	109 (4)
- Miscellaneous	100 (6)	128 (16)	228 (9)

It is seen that fever with or without any other major complaint was the commonest presenting symptom in 59% of all encounters followed by diarrhoea in 41%. Fever alone without cough or diarrhoea was the presenting complaint only in 18% of encounters. The other major complaints were cough in 30% and vomiting in 20% of all encounters. Most children had more than one complaint. Complaints other than quoted above were grouped according to systems involved. Complaints that could not be grouped together, were included in miscellaneous group.

Regarding encounter with febrile children, a significant difference was seen between GPs and paediatricians. Although GPs encountered slightly higher proportion of children with fever alone or both fever and cough, but duration of illness was significantly higher in encounters with paediatricians ($\chi^2=18.9, p<0.001$). Frequency of various drugs prescribed is given in Table III.

Table III. Number of encounters in which drugs were prescribed for various problems.

Drugs	GPs	Paediatricians	Total
	No. (%)	No. (%)	No. (%)
Antibacterials	870 (53)	331 (42)	1201 (49)
Antiemetics	131 (8)	73 (11)	204 (8)
Antidiarrhoeals	292 (18)	113 (14)	405 (17)
Antiamoebics	160 (10)	84 (11)	244 (10)
Cough and cold syrup	141 (7)	149 (19)	290 (12)
Paracetamol	362 (22)	252 (32)	612 (25)
Other analgesic and/or antipyretics	63 (4)	45 (6)	108 (4)
Antihistamines	81 (5)	86 (11)	167 (7)
Iron and/or vitamins	42 (3)	78 (10)	120 (5)
Miscellaneous	297 (18)	137 (17)	434 (18)
Injectables	211 (13)	43 (5)	254 (10)
Mixtures (dispensed from clinic)	1225 (75)	-	-
Total No. of encounters	1639 (100)	794 (100)	2433 (100)

It is seen that antibacterials were the commonest group of drugs prescribed in 49% encounters followed by paracetamol prescribed in 25% encounters. Arnoxicillin group (including few prescriptions of penicillin and ampicillin) and co-trimoxazole were the commonest antibacterials prescribed both by GPs and paediatricians. Antibacterials were prescribed in significantly less number of encounters and paracetamol, cough and cold syrups and iron and vitamins were prescribed in higher number of encounters with paediatricians.

Discussion

Prescribing of antibacterials in significantly smaller number and prescribing of paracetamol, other analgesics, antihistamines and cough syrups in higher number of encounters by paediatricians as compared to GPs, indicate that paediatricians are more selective in prescribing antibacterials and prefer to give symptomatic treatment. Despite this fact, prescribing of antibacterials in 42% of encounters by paediatricians cannot be described as satisfactory.

Prescribing of analgesics, antipyretics and cough syrups in higher number of encounters with paediatricians is perhaps due to absence of dispensing of drugs from their own clinics. As GPs dispense medicine in the form of 'mixtures', they include analgesics and cough remedies into their 'mixtures'. Though composition of these mixtures was not revealed by most GPs but some GPs informed the observers about main ingredients of the mixtures. Besides that observers witnessed presence of drugs like paracetamol syrup, cough syrups, aspirin tablets and various other tablets and syrups in large size

packings present in the dispensing corner of most GPs. Dispensing of “mixture” prepared in own clinics by mixing crushed tablets and other ingredients by GPs is due to the nature of their practice and perhaps necessary to get adequate remuneration. Unless majority of GPs decide not to dispense medicines and rely upon issuing prescriptions only, the trend of patients’ expectation to get medicine is unlikely to change. Encountering smaller number of patients with fever and cough. but with prolonged duration by paediatricians show parental anxiety. Patients who can afford financially or not getting desired response within a couple of days of treatment by GPs. prefer to consult pediatricians directly. Therefore, to get best medical care for their children within their financial resources, these parents might have preferred to consult paediatricians rather than GPs.

Higher encounter time (10 minutes) with patients can be another factor for comparatively lower antibacterial prescribing by paediatricians. With a short encounter time (2-3 minutes with GPs), it is not possible to take an adequate history, examine the patient to make up his/her mind about diagnosis and selection of drugs or to counsel the patient. Hence, it can be obviously speculated that GPs preferred to prescribe and/or dispense drugs rather than to spend time on diagnosing the case and counselling the patient. Higher use of injectables by GPs reflects both financial incentive and a desire to cure the illness as early as possible, as injectable medication has a higher cost.

Since prescribing of drugs is related to diagnosis, it was not possible to evaluate rationality of drugs prescribed for each encounter. The diagnosis was not available in majority of encounters in our study. For collective evaluation of irrational or excessive use of drugs in a given setting, it is not only unnecessary but also extremely difficult to analyse critically each prescription or each doctor’s practice individually. To overcome this problem, INRUD¹⁰ described several indicators for assessing rational use of drugs by practitioners in various health facilities. Some of these are:

1. Percentage of cases receiving antibiotics.
2. Number of drugs prescribed per case.
3. Percentage of cases receiving injections.
4. Percentage of patients for whom no drugs are prescribed.
5. Percentage of children under five with diarrhoea receiving ORS.
6. Percentage of children under five years receiving antidiarrhoeal products.
7. Percentage of drugs prescribed in generic form.
8. Average consultation time with a prescriber.

Using these INRUD indicators, studies from various parts of developing world have shown high prescribing rate of antibiotics and injectables and a low encounter time¹¹. But most of these studies have not looked into prescribing for children particularly in private practice by different types of practitioners. In Pakistan, private practice is the back bone of health care system and majority of those patients who can afford financially, prefer to use services of private practitioners. That is why we looked at their prescribing behaviour for childhood diseases encountered by them according to INRUD indicators but could not use all the criteria quoted above. Using these INRUD indicators, prescribing behaviour of both GPs and paediatricians cannot be termed satisfactory due to higher prescribing rate of antibacterials, antidiarrhoeals and injectables, low encounter time and lack of use of generic names. In Pakistan drugs are registered and sold under brand names and not under generic name. It was also interesting that there was no patient who was not prescribed or not given any drug.

Although our study shows a higher trend for prescribing antibacterials and other drugs but we have not looked into various factors responsible for this prescribing behaviour. It can be speculated that lack of knowledge, competition with fellow practitioners, financial impact on practitioners, detailing by medical representatives of drug companies etc are responsible for irrational prescribing. Though various studies^{14,15} done in other countries have found one or more of the above factors responsible for irrational prescribing but further studies are needed to determine their role in irrational and excessive drug prescribing in Pakistan. This is also necessary for planning any intervention strategy to improve

and promote rational prescribing of drugs.

Acknowledgements

Financial support for this research was provided by the Applied Diarrhoeal Disease Research Project at Harvard University through a cooperative agreement with the U.S. Agency for International Development. The authors gratefully acknowledge the contributions of Dr. James Trostle for assisting in the development of research proposal. We also acknowledge the help and able guidance of Mr. Jonathon Simon of ADDR at all stages of the study. without whose help and assistance the study would not have been possible.

We are thankful to all those who directly or indirectly helped us in analysing the data and writing this manuscript.

Finally we are thankful to Dr Syed Mairajuddin Shah and our field workers (Ms. Tayyaba Hussaini, Mr. Moharmnad Asif Aslam, Mr. Haseeb Fakih and Mr. Fahim Ahmed) for their long hours of field work and Mr Ismail Rehmani for his secretarial assistance.

References

1. Thamiikitkul. Antibiotic dispensing by drug store personnel in Bangkok, Thailand. *J. Antimicrobial Chemother.*, 1988;21:125-131.
2. Tomson, O. and Sterky, G. Sail prescribing by way of pharmaciea in three Asian developing countries. *Lancet*, 1986;ii:620-22.
3. Wolf-Gould, C.S., Taylor, N., Horwitz, S.M. et al. Misinformation about medication in rural Ghana (improper use of drugs). *Soc. Sci. Med.*, 1991;33:83-89.
4. Hoaaain, MM., Glass, MR. and Khan, MR. Antibiotic use in a rural community in Bangladesh. *list. 2. Epidemiol.*, 1982; 11:402-405.
5. Kunin, CM., Lipton, H.L., Tupasi, T. et al. Social, behavioral and practical factors affecting antibiotics use worldwide: Report of task force 4. *Rev. Infect. Dia.*, 1987;9:S270-284.
6. Sacha, L. and Tomaon, O. Medicine and culture a double perspective on drug utilization in a developing country. *Soc. Sci, Med.*, 1992;34:307-31-5.
7. Fabricant, S.J. and Hirachhon, N. Deranged distribution, perverse prescription, unprotected use: The irrationality of pharmaceuticals in the developing world. *Health Policy Plan.*, 1987;2:294-213-3.
8. WHO: National drug policy and rational drug use: A model curriculum, July 1985. DAP/85.6 WHO, 1985, Module 'pp. 2-3.
9. Richardson, R. Use and abuses of antibiotics. *The Networks Newsletter*, 1992;1 3-5.
10. Special section: Methods for INR UD indicators. Revised list of proposed indicators. *INRUD News*, 1991 ;2:9.
11. Hogerzeil, H. V., Bimo, Ross-Degnan, D., Laing, R.O. Field test for rational drug use-in twelve developing countries. *Lancet*, 1993;342:1408-10.
12. Soumersi, S., Quick, J, Avorn, 2. et al. Changing the unchangeable: Principles and experiences in improving prescribing accuracy. *World Pediatrics and Child Care*, 1984;62:447-74.
13. Hemminki, E. Review of literature on the factors affecting drug prescribing. *Soc. Sci. Med.*, 1975;9:111-115.
14. Avom, J., Chen, M. and Hartley, R. Scientific versus Commercial sources of influence on the prescribing behaviour of physicians. *Am. J. Med.*, 1982;73:4-8.
15. Schwartz; R.K., Soumersi, SB. and Avom, 3. Physician motivation for non-scientific drug prescribing. *Soc. Sci. Med.*, 1989;28:577-582.