

Sameen Siddiqi  
Dr. med.

## **Prescribing Practices of Public and Private Health Care Providers and Over-The-Counter Use of Drugs in Attock District of Pakistan**

Promotionsfach: Tropenhygiene und Öffentliches Gesundheitswesen  
Doktorvater: Prof. Dr. med. R. Sauerborn

Irrational use of drugs is a major problem of present day medical practice and its consequences include development of resistance to antibiotics, ineffective treatment, adverse effects, drug dependence and economic burden to the patient and society. A study from Attock district of Pakistan assessed this problem in the formal allopathic health sector and compared prescribing practices of health care providers in the public and private sector, and assessed over-the counter (OTC) use of drugs at pharmacies.

The **objective** of the study was to evaluate the pattern and practice of irrational prescriptions, with respect to the magnitude of the problem, identify underlying factors responsible for the problem and suggest measures for its control. The **specific objectives** were to: (a) investigate the prescription pattern and drug use among public sector primary health care facilities and private sector general practitioners (GPs); (b) compare differences in the prescription practices of health care providers in the two sectors and identify the underlying factors for these differences; (c) determine the extent and nature of sale of over-the counter (non-prescription) drugs by personnel who run pharmacies (chemist shops) and identify underlying factors.

The study was conducted in Attock district between October 1997 and March 1999, which has approximately 1.3 million inhabitants and a rural to urban distribution of 70:30. At the time of the survey, there were 62 public health facilities and 52 qualified GPs working in the district. The sampling unit was the patient-prescriber (P-P) encounter. The estimated sample size was 2,300 P-P encounters. The number of registered pharmacies ("chemist shops") functioning in the district was estimated to be 66. The sample size for pharmacies was estimated to be 1,066. WHO recommended drug use indicators were used to study prescription practices. Data was collected on the provider, patient and health facility attributes.

Prescriptions were collected from 60 public and 48 private health facilities. The mean ( $\pm$  s.e) number of drugs per prescription was  $4.1 \pm 0.06$  for private and  $2.7 \pm 0.04$  for public providers ( $p < 0.0001$ ). General practitioners (GPs) who represent the private sector prescribed at least one antibiotic in 62% of prescriptions as compared to 54% for public sector providers. Over 48% GP prescriptions had at least one injectable drug compared to 22.0% by public

providers ( $p < 0.0001$ ). Thirteen percent of GP prescriptions had two or more injections. More than 11% GP prescriptions had an intravenous infusion as compared to 1% for public providers ( $p < 0.001$ ). GPs prescribed three or more oral drugs in 70% prescriptions as compared to 44% for public providers ( $p < 0.0001$ ).

Prescription practices were analysed for four health problems, acute respiratory infection (ARI), childhood diarrhoea (CD), fever in children and fever in adults. For these disorders, both groups prescribed antibiotics generously, however, GPs prescribed them more frequently in ARI, CD and fever in children ( $p < 0.01$ ). GPs prescribed steroids more frequently, however, it was significantly higher in ARI cases ( $p < 0.001$ ). For all the four health problems studied, GPs prescribed injections more frequently than public providers ( $p < 0.001$ ). In CD cases GPs prescribed oral rehydration salt (ORS) less frequently (33.3%) than public providers (57.7%). GPs prescribed intravenous infusion in 12.3% cases of fever in adults as compared to none by public providers ( $p < 0.001$ ).

Data from 66 pharmacies evaluated 1,231 OTC encounters, of which 43% were instances of self-medication, while the rest were given on the advice of pharmacy staff. The mean ( $\pm$ s.e) number of drugs per prescription given on patient request was  $1.8 \pm 0.7$  vs.  $2.2 \pm 0.8$  when "prescribed" by the pharmacy personnel ( $p < 0.00009$ ). Patients asked for at least one antibiotic in 33% instances as compared to 50% for pharmacy-assisted drugs ( $p = 0.000001$ ). In 92.9% of self-medication and 93.4% instances of drugs given on pharmacy advice, an injection was not given ( $p = 0.14$ ). However patients demanded intravenous infusions more frequently than given by pharmacy personnel (2.1% vs. 0.6%;  $p = 0.033$ ).

General practitioners were predominantly urban based, were almost 10 years older, had considerably more years of experience, saw more patients per day and were more qualified than their public sector counterparts. Among the factors influencing prescribing practices, the important patient-related factors were the socio-economic status and demand for drugs. Other influencing factors included the role of the medical representative, market forces and fear of losing the patient, and availability of drugs at the health facility. Antibiotics, vitamins, analgesics, NSAIDs and corticosteroids comprised 60% of the drugs used in the district, out of which antibiotics constituted almost a quarter of all the drugs prescribed.

The important conclusions of the study indicate deficiencies in prescription practices among all health care providers however the problem is extremely serious among the more qualified general practitioners. General practitioners are prescribing the highest number of drugs, antibiotics and injections per prescription anywhere in the published literature. Their practices for common health problems such as ARI, CD and fever are highly irrational. OTC practice of self-medication or pharmacy staff assisted provision of drugs is equally common. Pharmacy personnel give antibiotics, NSAIDs, and steroids more commonly than

demanded by patients and/or customers. The appropriateness of prescribing by retail pharmacy staff or self-medication by patients is far from acceptable.

The principal recommendation of the study is to implement a combination of non-regulatory and regulatory interventions, directed at providers as well as consumers, to improve irrational and inappropriate drug use. Regulation alone would be ineffective unless it is supported by a well-established institutional mechanism, which ensures effective implementation. The Federal Ministry of Health and the Provincial Departments of Health have to play a leading role in improving rational and appropriate prescribing practices. The Pakistan Medical Association, the major representative body of physicians in the country, needs to recognize and develop a realistic approach to the problem of irrational prescribing through self-regulation and establishment of a code of conduct. The Pakistan Medical and Dental Council, which is responsible for the licensing of medical graduates, should evolve a system of continuing professional education and re-accreditation of physicians. The associations of druggists and pharmacists and the associations of physicians, under the stewardship of the government should develop a code that assists in determining the occupational task boundaries for the two professions. Finally, consumer protection organizations should be actively involved in raising public awareness about the hazards of irrational prescribing and inappropriate self-medication practices. This is critical for prompting rational drug use in any country.