Original Article

Drug utilization patterns in Rawalpindi and Islamabad, Pakistan

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Abstract

Objectives: To assess the prevalence of self medication among Pakistanis in rural and urban settings.

Methods: A door-to-door survey was carried out during June and July 2008 and 2009 after due verbal consent taken from the residents. The houses were randomly selected from ultra posh area, quarters of government employees, residents of Barani Training Institute, low socio-economic population in the surrounding of Adiallah road near Rawalpindi, and a remote village Raye Chak, (population 5000) some 50 kilometers away from the city.

Results: There were 2042 dosage forms of drugs from 430 houses; allopathic medicine 89.3%; traditional medicines 6.7%; and homeopathic drugs 4% representation. The top 10 companies had more than 57% market share among 147 firms whose products were reported. The availability of paediatric drugs mixtures/syrups was 24%, and injectiables, 5.5%. Nonsteroidal anti-inflammatory drugs (NSAID) had 38% representation; antimicrobials 25%, multivitamins and haematinics were 1.6% that was contrary to the general perception of the irrational use of this group of medicines.

Conclusion: Alternative medicine is gaining ground. Overuse of anti-inflammatory drugs suggest higher prevalence of pain, inflammation and infections than systemic disorders in society.

Keywords: Pharmacoepidemiology, Self medication, Drug utilization, Pharmaceutical firms, Alternative medicine (JPMA 62: 426; 2012).

Introduction

Good health is the legitimate right of every individual. Governments across the world allocate funds from their resources for health facilities. Health budget has subheads like salaries, services and purchase of drugs. The amount for purchase of medicines in Bangladesh and Nepal was 49% and 30% respectively.[1,2] It was observed that in year 2002, the subcontinent spent US$7.3 billion on the purchase of drugs and other health facilities.[3] Increase in world population and the escalation of drug prices have drained resources. Stagnitti documented 160% increase in expenditure of outpatient prescription drugs within 7 years in the USA.[4] Pakistan spent about US$27 million on the purchase of drugs in 1996-7. Pakistan has an approximate population of 187 million with a population growth rate of 2.1% per annum.[5] Inflation in currency rates and allocation of funds on non-productive heads had perpetuated the problem.

Health insurance and social security benefits are restricted to labourers in the industries. Families and individuals in Bangladesh have to spend 90.7% costs of the drugs from their own earnings.[2] More than 77% of medical expenditure in Pakistan is out of pocket.[6] About half of the population so far has no access to modern medicines. Government in Pakistan have been working hard to improve the economic outlook. The GDP growth was 8.4% in 2005.[7] Pakistan has more than 28000 registered drugs whereas India has about 100000 registered drugs available in the market.[8] The incentives of the medical firms to promote their products hinder the access of population to cost-effective drugs. There is a continuous escalation of drug prices and limited number of funds at government facilities. The issues of access and affordability need to be addressed.[6]

Traditional medicine and homeopathic medicine are parallel systems of treatment governed by independent regulatory bodies. An alternative cost-effective option for a patient is to visit traditional practitioners, homeopathic physicians, paramedics and Traditional Birth Attendants (TBAs) working in the suburbs of big towns and rural areas of the country. It may not be much rewarding as far as actual healthcare is concerned.

Legislations for over-the-counter and prescribed drugs supply could not be fully observed at pharmacy stores, and the documentation of patients' treatment is restricted to hospitals. This information is insufficient to conclude the rationale of drugs being consumed by the Pakistani population.

Self-prescription, easy access to drugs at pharmacy stores, low literacy levels and parallel systems of alternative medicine are factors that have aggravated, the problem,

leaving the community exposed to the hazards of irrational use of drugs.

Drug utilisation studies are mostly restricted to outdoor and indoor patients among government facilities or disease-oriented sub-specialities. These studies do not cover the whole population exposed to the problem. This information is insufficient to work out the rationale of drugs being consumed by the Pakistanis.

The aim of this study was to gain knowledge about the nature of drugs being used by the national population. Information was collected from non-institutionalised (community) population regarding household remedies/drugs available to the consumer irrespective of the source.

Subjects and Methods

Rawalpindi, a cosmopolitan city of Pakistan, was selected for this household survey. The population has cultural, linguistic and ethnic diversity. It has representation from Punjab, Sindh, Baluchistan, Khyber Pakhtoonkhua and Kashmir, as well as refugees from Afghanistan and Central Asia. A questionnaire seeking information like the name of drug, dosage form, prescribed by whom, the date of expiry etc. was designed to cover prospective cross-sectional information. Young pre-medical and second-year medical students were enrolled to volunteer during summer vacations (June-July 2008 and 2009). Verbal consent was taken from the residents of the houses surveyed and they were equested to display all the drugs available at home.

Based on the discussable adjustment sampling technique, the population was enrolled in the light of resources and access to medical facilities. The target was to have uniform representation from all socio-economic and ethnic groups. Using voters list for the allocation of houses, five percent of the total houses were randomly selected on the basis of random table number from each of the following groups: (a) Posh areas West ridge, Harley Street and Cob's Lines; (b) Quarters of government employees at Grasy Lines, Peoples' Colony and Humayun Road; (c) Residents of Barani Training Institute (Government of Punjab); (d) Low socio-economic population in the surroundings of Adiallah Road; and (e) A remote village Raye Chak (population 5000) 50 kilometres away from the city.

Groups C and E had no qualified medical practitioner available in the vicinity, and residents had to visit the nearest town or Rawalpindi for their health problems.

The collected data was analysed using SPSS version 15. Descriptive statistics were used to describe the data. Frequency and percentages were calculated for qualitative variables.

Results

Data was collected from 430 houses through 2042 dosage forms, featuring 147 pharmaceutical firms. Female volunteers did better in terms of data collection than their male counterparts. The public response was satisfactory, with the children showing enthusiasm in searching the drugs in their houses and displaying them on a cot or a table. The

Table: Systemic classification of drugs used by the Pakistani population.

Group of drugs	Number	Percentage
NSAIDs	795	38
Acetaminophen	323	40.62
Aspirin	99	12.45
Diclofenac	101	12.70
Ibuprufen	179	22.51
Mefenemic acid	61	6.67
Naproxen	24	3
Misc	8	1
Antimicrobials	518	25
Azoles	69	13.32
Cephalosporins	47	9
Chloroquine	22	4.24
Doxycycline	17	3.28
Fusidic acid	20	3.86
Macrolides	59	11.38
Metronidazole	94	18.14
Penicillins	130	25
Quinolones	60	12
GIT disorders	540	26
Antidiarrheal	105	19.44
Antiemetics	229	42.4
Drugs for Peptic disease	186	34.44
Laxatives	20	3.70
CNS disorders	29	1.4
CVS disorders	87	4
Endocrinal disorders	68	3.24
Respiratory disorders	24	1
Vitamins; haematinics	34	1.6

NSAIDS: Non-steriodal anti-inflammatory drugs. GIT: Gastro-intestinal tract. CNS: Central nervous system. CVS: Cardiovascular system.

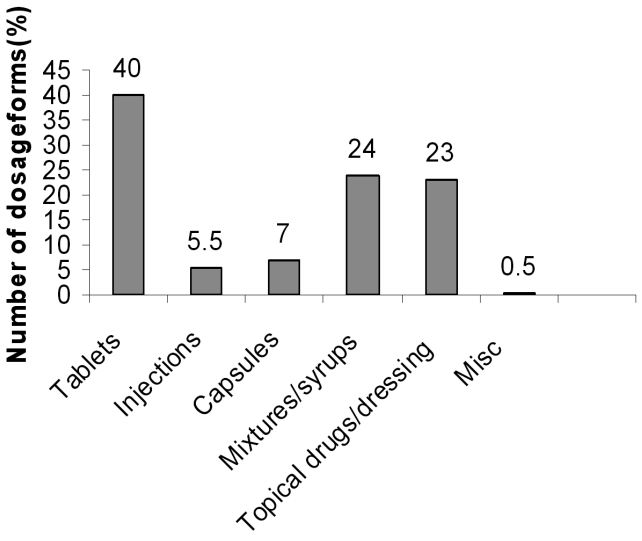

Figure: Dosage forms of drugs being used by the population (n=2042).

mean number of dugs was 5 (1-26) per house; It was lesser in Groups D and E. The evidence of modern medicines (89.3%) was more than traditional medicines (6.7%), whereas homeopathic drugs had the least (4%) representation. Hamdard Laboratories (WAQF) Pakistan and Qarshi Industries (Pvt) Ltd Pakistan were the major firms among the traditional pharmaceutical industry.

The distribution of major dosage forms was: tablets 40%, mixtures/syrups 24%, and dermatological preparations, plasters and dressings 23%. Capsules (7%) and injectables (5.5%) were less common (Figure). Non-steroidal anti-inflammatory drugs (NSAIDs) had predominant 38% representation among the groups of drugs. Drugs used for gastrointestinal (GIT) disorders (26%) and antimicrobials (25%) had almost equal utility in the population surveyed (Table). Drugs used for cardiovascular disorders (4%) and endocrinal diseases (3%) had lesser representation. Drugs for respiratory diseases such as bronchodilators and cough suppressants (1%) and central nervous system (CNS) diseases like anxiety, insomnia and epilepsy (1.4%) had the least share in the drugs enlisted during the study. The reflection of haematinics and multivitamins was 1.6% which was contrary to the general perception about the irrational prescription of this group without requirements in patients.

Discussion

The objective of this pharmacoepidemiological survey was to have first-hand information about the nature of drugs being used by the Pakistani population. Information from non-institutionalised (community) population regarding household remedies/drugs available to the consumers irrespective of the source was collected.

Traditional medicines (6.7%) comprised cough suppressants (toot siyah), anticolics (gripe water, rose water and carmina tablets), blood purifiers (safi) and tonics (khameeras and sharbate faulad). Homeopathic medicine (4%) comprised analgesics (aconite), anti-allergies (agaricus), lifesaving drug (arsenic album), cerebrovascular accident remedies (casticum) and infections (brionia, ferrum phos 30). Homeopathic medicines were mostly in the form of powders and drops.

Pharmaceutical brands were documented from 147 companies; the top 10 firms had more than 57% market share. Multinational firms had the dominance (73%) followed by domestic firms (27%) in terms of market share.

The availability of injections in homes was 5.5% lesser than the number prescribed at government-run health facilities (15%) in Pakistan.[9] Mamon observed the prescription of injectables was 73% at Basic Health Centres as well as Rural Health Centres in the Sindh province of Pakistan.[5] Field test for rational drug use in 12 developing countries documented about 22% usage of injections: Indonesia 62.5 %, Uganda 48%, Uzbekistan 51%, and the least 5% in Nepal.[10,11] Nizami et al observed that 15% of general practitioners and 8% of paediatricians used injections during their private practice.[12] Since the administration of injection needs specific skills, it may be a factor in the presence of just 5.5% injections in this survey.

The most common analgesics with minimal anti-inflammatory effects were acetaminophen 323 (40.62%), ibuprofen 179 (22.51%) and mefenamic acid 61 (7.67%). Analgesics with predominant anti-inflammatory effects (diclofenac Na, aspirin, naproxen and indomethacin etc) had 29% representation. In a study carried out in Bangladesh, patients reporting to medical OPDs had received 60% analgesics with no or minimal anti-inflammatory effect.[2] Erah et al reported 18.2% analgesics advised to Nigerian patients in healthcare facilities.[13]

The antimicrobials available at homes were 24%, but encounters with antibacterial at health facilities in Nigeria has been 56%, Pakistan 53.3%, Uzbekistan 56% while Macedo had the minimum 22% use of antimicrobials.[11,13]

β-Lactam antibiotics such as penicillins and cephalosporins 177 (34.16%), macrolides 59 (11.38%), fluorinated quinolones 60(11.58%) were among the most common antimicrobials. Tetracyclines 17 (3.28%) and anti-malarials 22 (4.24%) were the least noted antibacterials. Metronidazol 94 (18.14%) is a nitroimidazole antiprotozoal also has activity against anaerobes, bacteroides and Clostdrium difficile. It is one of the first-line drugs against amoebiasis, giardiasis, vaginitis and mixed anaerobe infections due to its safety and cost-effectiveness.[14] Azoles 69 (13.32%) are synthetic ergosterol synthesis inhibitors used against dermophytes and systemic fungal infections.[15] Antimycotics earned the third position among the antimicrobials. There is increased incidence of invasive fungi infections. It may be due to the extensive use of antimicrobials. Patients of extensive burns, neutropoenia and HIV infections are more prone to fungal infections.[16] Antimycobacterial drugs were not seen throughout the survey while the prevalence of tuberculosis in the general population in Pakistan is 175 per 100,000, and Pakistan is at the 8th position among tuberculosis-affected countries.[17] One of the reasons of not getting antimycobacterials from the studied population could be the notion of TB as a taboo in Pakistan. People fear social isolation on the disclosure of the disease. There is a unanimous opinion about the irrational use of vitamins and haematinics. Pavin et al have tabulated vitamins and haematinics at number one (10.83%) among 27 groups of drugs prescribed at rural health clinics in Uzbekistan.[11] In contrast, we observed 1.6% drugs coming under this category. A heavily funded and publicised field of mother and

child health had no representation of oral contraceptives. One reason for this may be the fact that prefer to keep it personal in the conservative society.

Drugs used as antiemetics, anthistaminics and allergic manifestations 229 (42.40%) were grouped in gastrointestinal disorders. Drugs prescribed for peptic disease 186 (34.44%) such as antacids and H2 receptor blockers had the second place. Antidiarrhoeals 105 (19.44%) were mainly oral rehydration salts and ispagula husk. Metronidazol and antimicrobials recommended for dysentery were included in antimicrobials. Benzodiazepines had preponderance among CNS medicines 29 (1.4%). Significant use of anti-ulcer, anxiolytic, sedative and hypnotics reflects the prevalence of stress in society.

In terms of limitations, the study did not reflect the true picture of the whole country because Rawalpindi and Islamabad have better standards of education and civic facilities than a number of towns in Pakistan. There were uncertainties while comparison consumer data with earlier studies that were restricted to outdoor and indoor patients, among government facilities or disease-oriented sub-specialties.

Conclusion

The study documents significant dependence on alternative medicine. Besides, overuse of NSAIDs and antimicrobials compared to the other groups indicates that the predominant problems are pain and infections in the community. It is essential to extend this study to the institutions and have first-hand information from the OPDs to draw a clearer picture of the real health problem.

Acknowledgement

We would like to thank the teachers and students of F.G. Degree College for Women, Abid Majid Road, Rawalpindi, and the nursing staff at RHU 267 R.B. Faisalabad, for their contribution to the study.

References

1. Rehana HS, Nagarani MA, Rehan M. A study on the drug prescribing pattern and use of antimicrobial agents at a tertiary care teaching hospital in Eastern Nepal. Indian J Pharmacol 1998; 30: 175-80.
2. Rahman MS, Begum ZA, Samad MK. Prescribing pattern of non-steroidal anti-inflammatory drugs at outpatient departments of teaching hospitals. Bangladesh J Pharmacol 2007; 2: 1-6.
3. IMS Health Market report: global pharmaceutical market forecast. (Online) (Cited 2010 May 7). Available from URL: http://www.ims-global.com/insight/report/global/report.htm.
4. Stagnitti MN. Trends in outpatient prescription drug utilisation and expenditures: 1997 and 2004. Statistical Brief No. 168. Agency for healthcare research and quality, Rockville MD, 2007. (Online) (Cited 2010 May 7). Available from URL: http://www.meps.ahrq.gov/mepsweb/data_files/publications/st168/stat168.pdf.
5. Memon K. Use of drugs in Sindh Province Pakistan; primary health care facilities. 2001. (Online) (Cited 2010 May 7). Available from URL: http://dcc2.bumc.bu.edu/prdu/Other_Documents/Khalil_Concentration_Paper.htm.
6. World Health Organisation (WHO). Medicines strategy countries at the Core 2004-2007. (Online) (Cited 2010 May 7). Available from URL: http://whqlibdoc. WHO.int/hq/2004/WHO_EDM_2004.2.pdf.
7. Jamshed S, Babar ZUD, Ibrahim MIM, Hassali MAA. Generic medicines as a way to improve access and affordability: A proposed framework for Pakistan. J Clin Diag Res 2009; 3: 1596-600.
8. Ranade A, Kapur G. Sectoral report: Pharmaceutical industry. ABNAMRO 2001. (Online) (Cited 2010 May 7). Available from URL: www.abnamroindia.com/Research/pdf/pharmaindy-rep-new.pdf.
9. Hafeez A, Kiani AG, ud Din S, Muhammad W, Butt K, Shah Z, et al. Prescribing and dispensing practices in public sector health facilities in Pakistan: survey report. J Pak Med Assoc 2004; 54: 187-91.
10. Hogerzeil HV, Bimo Ross-Degnan D, Laing RO, Ofori-Adjei D, Sanstoso B, Azad Chowdhury AK, et al. Field tests for rational drug use in twelve developing countries. Lancet 1993; 342: 1408-10.
11. Pavin M, Nurgozhin T, Yusufy F, Liang R. Prescribing practices of rural primary health care physicians in Uzbekistan. Trop Med and Internat Health 2003; 8: 182-90.
12. Nizami SQ, Khan I, Bhutta ZA. Drug prescribing practices of general practitioners and pediatricians for childhood diarrhea in Karachi, Pakistan. Soc Sci Med 1996; 42: 1133-7.
13. Erah PO, Olumide GO, Okhamafe AO. Prescribing practices in two health care facilities in Warri, Southren Nigeria: a comparative study. Trop J Pharmac Res 2003; 2: 175-82.
14. Rosenthal PJ. Antiprotozoal drugs. In: Katzung BG, Masters SB, Trevor AJ eds. Basic and Clinical Pharmacology, 11th ed. Singapore: Mc Graw Hill, 2009; pp 899- 921.
15. Sheppard D, Lampiris HW. Antifungal agents. In: Katzung BG, Masters SB, Trevor AJ eds. Basic and Clinical Pharmacology. 11th ed. Singapore: Mc Graw Hill, 2009; pp 835-44.
16. Arif K, Ali SA, Amanullah S, Siddique I, Khan JA, Nayani P. Physician compliance with national tuberculosis treatment guidelines: a university hospital study. Int J Tuberc Lung Dis 1997; 2: 2225-30.
17. Enoch DA, Ludlam HA, Brown NM. Invasive fungal infections: a review of epidemiology and managements options. J Med Microbiol 2006; 55: 809-18.