

MEDICATION PRACTICES IN BANGLADESH ----- ROLES OF PHARMACISTS AT CURRENT CIRCUMSTANCES

MANIK CHANDRA SHILL¹, ASISH KUMAR DAS^{2*}

¹ Coordinator – IPD Pharmacy, Square Hospitals Ltd. Dhaka, Bangladesh, ² Associate Professor, Pharmacy Discipline, Khulna University, Khulna-9208, Bangladesh. Email: dasasish03@yahoo.com

Received: 12 April 2011, Revised and Accepted: 6 May 2011

ABSTRACT

Principal objectives of the National Drug Policy, 1982 were to make available essential drugs, ensure good quality drugs, control drug prices, ensure rational use of drugs, develop an effective drug monitoring system, improve the standard of hospital and retail pharmacies and ensure good manufacturing practices. Though we have earned lots of things but still we are far from achieving these entire goals. Unsafe and irrational use of drugs not only increasing financial burden but also causing death and engender our quality of lives. Studies have shown that pharmacists can reduce medication errors and also play vital role in rational use of medication thus reducing financial load as well as can cut down national budget on drugs procurement. Pharmacists are also a good source of drug informations for healthcare professionals and counseling patients regarding medication and other social issues. To achieve the goals of National Health policy 2010, more involvement of pharmacists in the healthcare system especially in the hospital and community pharmacies is inevitable.

Keywords: Irrational drug use, Medication error, Pharmacist, Healthcare system, Hospital and Community pharmacy.

BACKGROUND

The National Coordinating Council for Medication Error Reporting and Prevention (NCC MERP) defines medication error as “any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer”.¹ Medication errors result from faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent mistakes. Problems can result from illegible handwriting, use of dangerous abbreviations, overlooked interactions with other medicines, oral miscommunications, and sound-alike or look-alike products.²

Poor product quality, adverse drug reactions (ADRs), and medication errors have huge impact on healthcare system which is almost impossible to estimate.³ Authors of a meta-analysis estimated that ADRs alone—excluding medication errors—killed over 100,000 people in 1994 and were the fourth to six leading causes of death in the United States.⁴ A similar study estimated that over 70 percent of ADRs that resulted in hospitalization in the United Kingdom could have been avoided.⁵

Bates et al., reported that 56% of adverse drug events occurred during the prescribing stage and 34% during the administration stage; only 4% occurred at the dispensing stage.⁶ The common medication errors includes wrong dose, overdose, under-dose, inadequate follow up, inappropriate drug or wrong choice, decline in renal/hepatic function requiring alteration, avoidable delay in treatment, known allergy, wrong drug name, wrong frequency, drug-drug interaction, physician practicing outside area of expertise, wrong route etc. The most common causes of medication error are lack of knowledge about the drug (dose, form, frequency, route of administration, error in the choice) and lack of informations about the patient (results of lab test, current drugs and recent doses).⁷

The quality of health care, particularly the rational use of drugs, depends on a wide range of activities, such as making the correct diagnosis, prescribing the appropriate drug(s), and dispensing them properly. When used rationally, drugs cure ailments; on the other hand, it could be dangerous and life threatening when used irrationally.⁸ Thus medication errors should be prevented through proper education and effective healthcare system comprising of prescribers, pharmacists, nurses, administrators and patients.

Bangladesh Perspective

Bangladesh Government spent Tk. 5,500 crores in health only in the year 1996-1997, out of which total spending on drugs was Tk. 2,700

crores (49%).⁹ Due to exploitative market, almost 50% of our population has no reliable access to modern medicines and the rest 50% have access but are trapped into using non-essential, irrational and even dangerous drugs. This widespread irrationality prevails both in the private and public sectors, leading towards serious health problems and wastage of scarce resources.¹⁰

Pharmaceutical industries of Bangladesh have flourished tremendously after the implementation of National Drug Policy and Drug Control Ordinance 1982. Availability of essential drugs also increased remarkably with the increase in the volume of local production of all types of recognized drugs and the monetary value of which grew from Taka 1730 million in 1981 to about Taka 41000 million in 2002. Quality of products has improved and substandard drugs fell from 36% in 1970 to only 2% in 2002 and becoming a drug exporting country.¹¹ But a survey conducted in 1988 – 91 has showed that numerous small companies still market substandard drugs in the country.¹² Fake or substandard medicines, including lifesaving ones, with an estimated worth of US\$ 150 million per year, are flooding the domestic market.¹³

National Drug Policy (NDP) 2005 states that only registered drugs should be allowed to distributed and sold throughout the country under person having professional qualification or holding valid professional license. NDP 2005 again indicates that no drugs other than OTC should be sold or dispensed without prescriptions. Rational use of drugs (RUD) should be ensured by conducting survey on the system of prescribing, dispensing and patient compliance. Monitoring and reporting adverse drug reactions (ADR) should be done seriously to ensure safe and rational use of drugs in the country.¹¹ But according to the Bangladesh Chemist and Druggist Association, there are about 70,000 illegal drugstores. Most of them are selling substandard or fake, poor quality, smuggled and adulterated medicines and a significant proportions of these medicines are selling without registered doctors' prescription indicating violation of NDP.¹⁴ Drugs Testing Laboratory in its annual testing of 5,000 local samples found 300 either counterfeits or of very low quality.¹⁵ Weak enforcement of the provision of laws of National Drug Policy and Drug Control Ordinance 1982 like punishment by imprisonment or fine for those who manufacture or sell substandard drugs might endanger the situation.¹²

F. Ahmed et al. in their study showed that 13.33% of Metronidazole tablet and 20% suspensions of the same under investigation were less potent.¹⁶ Again, a study involving a sample of 15 brands of ciprofloxacin collected for chemical and bioassay revealed seven brands contained active ingredient less than the USP specification.¹⁷ Another report noted that 69% of Paracetamol tablets and 80 per

cent of Ampicillin capsules produced by small companies were of substandard quality.¹⁸ It is widely alleged that adulteration flourishes in the country because of poor government vigilance and supervision over drug manufacturers and sellers. Unfortunately, a section of corrupt physicians and government officials is involved in this underhand dealings.¹⁹

Mohammed Hanif et al. in their study in 1995 found that Paracetamol elixirs with Diethylene Glycol as a diluents were responsible for a large outbreak of fatal renal failure in Bangladesh.²⁰ Recently same incident has been repeated after taking Paracetamol syrup where about 34 children with renal failure were admitted at the Dhaka Shishu Hospital and the Bangabondu Sheikh Mujib Medical University (BSMMU) and 25 were died out of them. Following this tragedy, a probe committee which examined 300 samples of Paracetamol and Vitamin syrup produced by 10 different pharmaceutical companies and found the presence of poisonous Diethylene Glycol in the Paracetamol syrup manufactured by one of those companies.^{21,22}

Rational drug use is an important part of health policy ensuring that patients receive medications appropriate to their clinical needs, in doses that meet their own requirements for an adequate period of time and at the lowest cost to them and their community.²³ Numerous studies showed irrational prescribing both from developed and developing countries consisting of polypharmacy, use of drugs that are not related to the diagnosis, unnecessary use of antibiotics, irrational self-medication, or drugs taken in insufficient quantities.²⁴ Guyon et al. in their studies focused some factors behind inappropriate prescriptions like poor consulting period of doctors (average 54 seconds only); short dispensing time (avg. 23 seconds only) and patients' misunderstanding about medicine dosage (only 55% patient can understand correctly).²⁵ It was estimated that more than half of medicines were inappropriately prescribed, dispensed or sold.²⁶ Shapna Sultana et al. in her study showed that several prescriptions lack even the basic information such as the identity of the practitioner and patient. The clarity of instructions was inadequate for more than half of all prescriptions whereas poly-pharmacy was present with about 90% of prescriptions and a significant proportion of which received 5 or more medications.²⁷

The prescription procedure of antibiotics in Bangladesh deviates from ideal practice and in most of the cases these are prescribed mainly on the patient's complaints. All available antibiotics were prescribed in inappropriate doses and duration. Antibiotics are sold without any prescriptions, and even ordinary people without any knowledge of medicine ask the drug seller for specific antibiotics.^{28,29} One study showed that 26% of purchased drugs were antibiotics for children aged 0-4 year(s) and 48% of antibiotics were purchased in quantities of less than a single day's dose.³⁰ Misuse of antibiotics even in some diagnoses incurring significant financial burden.³¹

Over the counter (OTC) drugs have emerged recently as drugs of serious misuse across Bangladesh, and other neighboring countries. One report estimated that there are four million drug misusers in the South Asian region, with Bangladesh accounting for nearly 500,000.³² Self medications in a population with low literacy level like Bangladesh are very challenging, which poses risks such as incorrect diagnosis, absence of knowledge of alternative treatments, irrational use of drugs and neglecting side effects and drug interactions etc. Study showed that around 30-40% of underprivileged population including the women, elderly, ethnic minorities, poor/ultra-poor undertake self-medications for managing illness.³³

Role of pharmacist

The presence of a pharmacist on a post-take ward round improved the accuracy of drug history documentation, reduced prescribing costs, and decreased the potential risk to patients.³⁴ In cases of patients with multiple medications, organ failure, or other conditions that make prescribing a challenge, pharmacists can offer their expertise in selecting the appropriate and most efficacious medications that will prevent adverse drug events.³⁵ Surrey M

Walton in his study found that the shortage of pharmacists intensified medication errors.³⁶

Poor adherence to medication is a major problem among patients with chronic diseases like hypertension, cardiovascular diseases etc. Sulieman et al. showed a positive relationship between hospital admission and poor adherence to hypertensive therapy.³⁷ Another study has revealed significant improvement on patient's knowledge, attitude and practice regarding chronic obstructive pulmonary disease (COPD) when clinical pharmacist provide health education to patients and thus offer a positive impact on treatment outcome.³⁸

The pharmacist could be a coordinator between different members of healthcare team and the patients. Thus, involvement of pharmacists in health management system is becoming very crucial day by day. Pharmacists are involved in providing health care facilities as well as suggesting medical staff on proper selection of drugs. They also plan, monitor and evaluate drug programs to improve health and reduce health inequalities. Hospital pharmacists ensure that medicines are managed safely and effectively so that they are appropriate for the age, sex, body weight and clinical status of the patient.³⁹ Community pharmacists on the other hand come in direct contact with the public and they not only dispense medications but also counsels patients regarding general health topics such as diet, exercise, stress management, over-the-counter medications etc. Some community pharmacists also provide specialized services to help patients with diabetes, asthma, smoking cessation, drug addiction, and patients with high blood pressure.⁴⁰

Pharmacists can prevent drug interaction, counsel patient regarding the disease and medication e.g. providing informations, advice and assistance about medication and therapy due to their access of interpersonal communication. Thus pharmacists can play a key role in preventing drug abuse by providing clear informations about the adverse effects of medications. A pharmacist is one of the inevitable members of healthcare team who can help in achieving the goal of rational use of drugs by following good pharmacy practices and can also combat counterfeit drugs due to their pharmaceutical expertise.⁴¹ Besides pharmacists can take part in nutritional counseling, vaccination, AIDS, family planning etc.⁴⁰

To reduce the potential medication error, David U. in his column in 'Medication Safety Alerts'⁴² outlined the roles of pharmacists at different stages of medication use as below

Prescribing Stage

- Clarify and verify if not sure or not clear
- Establish protocols and order sets
- Monitor all medication profiles
- Maintain open communication channels with physicians
- Educate physicians about dangerous abbreviations
- Provide input to patients' medication regimens
- Encourage physicians to use protocols and preprinted order forms
- Support and facilitate implementation of computerized physician order entry systems
- Support use of a personal digital assistant for clinical information resources

Dispensing Stage

- Automate dispensing
- Reorganize drug storage and shelving to separate drugs with similar names
- Redesign workflow to achieve efficiency and to facilitate safety checking
- Make use of computerized clinical information
- Be more vigilant with high-risk medications and high-risk patients, e.g., establish a system of double-checks
- Communicate clearly with nurses and patients

Transcribing and Administering Stages

- Support and facilitate use of electronic medication administration records (MARS)

- Ensure that each patient's MAR is updated in a timely manner when pharmacy service is not available
- Check and compare each patient's MAR at least daily to ensure that orders are interpreted correctly and carried out
- Support the use of point-of-care dispensing cabinets
- Support the use of bar coding for patients, orders, and drugs for administration

Monitoring Stage

- Follow up laboratory results and/or blood level monitoring
- Screen automatic stop orders for drugs that require reactivation
- Perform daily review of drug profiles to spot potential problems
- Establish rapport and effective communication with nurses
- Engage patients

CONCLUSION

National Drug Policy 2005 of Bangladesh suggests that medicine distribution and utilization in retail pharmacies and hospitals should be under the supervision of qualified pharmacist. But reality is that no graduate pharmacist is working in retail pharmacies or Government hospitals of Bangladesh except very few tertiary private hospitals. Pharmacist and pharmacy service is a vital part of health care system. To attain the ideal healthcare service doctor, pharmacist, nurse and other healthcare professionals must work together. It is noteworthy to mention that any interruption in the team work will disrupt the whole health system and patient care service will never be achieved.

REFERENCES

1. NCC MERP (National Coordinating Council for Medication Error Reporting and Prevention), 2009. "About Medication Errors." (<http://www.nccmerp.org/aboutMedErrors.html>).
2. ISMP (The Institute for Safe Medication Practices). 2008. "Heparin Errors Continue Despite Prior, High-Profile, Fatal Events." ISMP Newsletter, July 17, 2008. (<http://www.ismp.org/Newsletters/acutecare/articles/20080717.asp>).
3. Kohn LT, Corrigan JM, and Donaldson MS. To Err is Human: Building a Safer Health System. Washington, D.C.: National Academy Press, Institute of Medicine, 1999. (<http://www.nap.edu/books/0309068371/html>).
4. Lazarou J, Pomeranz B, Corey P. Incidence of Adverse Reactions in Hospitalized Patients: A Meta-analysis of Prospective Studies. JAMA 1998; 279: 1200-1205.
5. Pirmohamed M, Atuah KN, Dodoo ANO, Winstanley P. Pharmacovigilance in Developing Countries. BMJ 2007; 335: 462.
6. Bates DW, Cullen DJ, Laird N, Petersen LA, Small SD, Servi D, et al. Incidence of adverse drug events and potential adverse drug events, Implications for prevention. JAMA 1995; 274: 29-34.
7. Bhatt AD, Healthcare Management, 2002. (<http://www.expresshealthcaremgmt.com/20020630/edit2.html>).
8. Chowdhury SAR. Prescribing a rational drug. Bangladesh Journal of Physiology and Pharmacology 1991; 7: 182-187.
9. Bangladesh National Health Accounts, 1996-1997. Health Economic Units, Ministry of Health and Family Welfare, Bangladesh. (<http://www.apnhan.org/territories/bgd/docs/BangladeshNH A1996-97.pdf>).
10. Bangladesh Public Health Conference, 2008 (http://www.unnayan.org/reports/Report_BPC_08.pdf).
11. National Drug Policy 2005, Ministry of Health and Family Welfare, Government of the People's Republic of Bangladesh. (http://www.ddabd.org/download/drug_policy_2005_eng.pdf).
12. Roy J. The menace of substandard drugs. World Health Forum 1994; 15: 406-407.
13. Smith G. What FIP and WHO are doing to fight the problem of counterfeit drugs? Pharm J 2004; 273: 394-396.
14. Govt. deprived of revenue, adulterated medicines being sold: Mushroom growth of pharmacies, 70,000 shops trading without licenses. The Bangladesh Observer, 2003. (<http://www.bangladeshobserveronline.com/new/2003/09/17/district.htm>).
15. War against fake drugs waged. The Daily Star, 2003. (<http://www.thedailystar.net/2003/11/14/d3111401011.htm>).
16. Ahmed F, Das AK, Karmakar UK, Khaleque T, Shill MC. Quality of Marketed Metronidazole Preparations in Bangladesh - An Analytical Overview. Journal of Biological Science 2003; 3: 940 - 950.
17. Hossain A, Rafiquzzaman, Haque M. Studies on quality of marketed drugs "ciprofloxacin" a case study. Proceedings of the International Conference on Pharmaceutical Affairs, 2001; Kathmandu, Nepal, 172.
18. Islam MS. Therapeutic drug use in Bangladesh: policy versus practice. Indian J Med Ethics 2008; 5:24-25.
19. Spurious medicines. New Nation, 2006 Sep 24. (http://nation.ittefaq.com/artman/publish/article_31014.shtml).
20. Hanif M, Mobarak MR, Ronan A, Rahman D, Donovan JJ, Bennish ML. Fatal renal failure caused by diethylene glycol in paracetamol elixir: the Bangladesh epidemic. BMJ 1995; 311: 88.
21. Sengupta A. The paracetamol syrup tragedy. The Financial Express. August 2, 2009. (<http://www.thefinancialexpress-bd.com/2009/08/02/74962.html>).
22. Rid's syrup unauthorised, toxic element found. The Daily Star. July 30, 2009. (<http://www.thedailystar.net/newDesign/news-details.php?nid=99261>).
23. Management sciences for Health, Managing drug supply, West Hartford, Connecticut, USA, Kumarian Press, 1997.
24. Hogerzeil HV. Promoting Rational Prescribing: an International Perspective. International experience in rational use of drugs. Br J Clin Pharmacol 1995; 39:1-6.
25. Guyon AB, Barman A, Ahmed JU, Aiam MS. A baseline survey on use of drugs at the primary health care level in Bangladesh. Bulletin of the World Health Organization 1994; 72: 265-271.
26. Chowdhury FR, Rahman MM, Huq MF, Begum S. Rationality of drug uses: its Bangladeshi perspectives. Mymensingh Medical Journal. 2006; 15: 215-219.
27. Sultana S, Hamid K, Islam KMS, Roy S, Saha MR, Zulfiker AHM, Urmi KF. Assessment of Prescription Pattern of Hypertensive Patient's Prescription: A Prescription Survey Study from Various Hospitals of Bangladesh, European Journal of Scientific Research 2010; 40: 500-505.
28. Banglapedia (National Encyclopedia of Bangladesh). Rational Use of Drugs. 1st Edition (February 2004). Asiatic Society of Bangladesh, Dhaka.
29. Mamun KZ, Tabassum S, Shears P, Hart CA. A survey of antimicrobial prescribing and dispensing practices in rural Bangladesh. Mymensingh Medical Journal 2006; 15: 81-84.
30. Baqui AH, Black RE, Arifeen SE, Yunus M, Zaman K, Begum N et al. Zinc Therapy for Diarrhoea Increased the Use of Oral Rehydration Therapy and Reduced the Use of Antibiotics in Bangladeshi Children. Journal of Health, Population and Nutrition 2004; 22: 440-442.
31. Fahad BM, Matin A, Shill MC, Das AK. Pilot Study of Antibiotic Usage pattern at a primary health care unit at Bangladesh. Australasian Medical Journal 2010; 3: 414 - 421.
32. Mudur G. Abuse of OTC drugs rising in South Asia. BMJ 1999; 318:556.
33. Ahmed SM. Exploring Health-seeking behaviour of disadvantaged populations in rural Bangladesh (PhD Dissertation, No. 05/433). Karolinska University Press. Sweden; 2005. (<http://diss.kib.ki.se/2005/91-7140-435-X/>).
34. Fertleman M, Barnett N, Patel T. Improving medication management for patients: the effect of a pharmacist on post-admission ward rounds. Qual Saf Health Care 2005; 14: 207-211.
35. Prevention of Medication Errors Information Statement. American Academy of Orthopaedic Surgeons. (<http://www.aaos.org/about/papers/advistmt/1026.asp>).

36. Walton SM. The Pharmacist Shortage and Medication Errors: Issues and Evidence. *Journal of Medical Systems* 2004; 28(1):63-69.
37. Suleiman A, Sulaiman S, Albarq A. Hospital Admission And Poor Adherence To Antihypertensive Therapy: Is There Any Relationship? *International Journal of Pharmacy and Pharmaceutical Sciences* 2009; 2: 38 - 46.
38. Reema T, Adepu R, Sabin T. Impact of Clinical Pharmacist Intervention on Knowledge, Attitude and Practice (KAP) of Patients with Chronic Obstructive Pulmonary Disease. *International Journal of Pharmacy and Pharmaceutical Sciences* 2010; 2: 54 - 57.
39. Role of Pharmacist (http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyandGuidance/Browsable/DH_5355019).
40. Ishita, Kaushik D, Dureja H. Role of community pharmacist in ensuring better healthcare (<http://www.pharmabiz.com/article/detnews.asp?articleid=22582§ionid=46>).
41. Pahwa R, Sharma A, Sharma P, Sharma PC. Role of pharmacist in safe use of medicines (<http://www.pharmabiz.com/article/detnews.asp?articleid=42883§ionid=46>).
42. David U. Medication Safety Alert. *CJHP* 2003; 56: 97-99.