ORIGINAL ARTICLE

NON-STEROIDAL ANTI-INFLAMMATORY DRUGS VS. PARACETAMOL: DRUG AVAILABILITY, PATIENTS' PREFERENCE AND KNOWLEDGE OF TOXICITY

Quratulain Zamir, Amina Nadeem

Army Medical College, National University of Medical Sciences (NUMS), Islamabad-Pakistan

Background: Self-medication is a common practice which is influenced by level of education, society factors and health care facilities availability. In our region, Pakistan, it is very common and awareness regarding prescription implementation needs to be ensured. Hence the current study highlights the preference, availability and knowledge of toxicity of non-steroidal anti-inflammatory medications and paracetamol in Pakistan. **Method:** It was a Descriptive, cross sectional, conducted in Rawalpindi and Islamabad, Pakistan from May to august 2012. A total of 1000 questionnaires comprising of 21 questions were distributed to the persons with age groups from 18 years to 40 years. Non-probability convenience sampling technique was used for results deduction. Data was analysed using descriptive statistics. **Results:** The most commonly used medicine was Mefenamic acid (n=191, 40.8%). Paracetamol was second on the priority list (n=146, 31.3%). About 178 out of 467(38.1%) used these medications for headache. Very few responders knew about the toxic doses of the medicines they used. Only 52 (11%) were aware of the raised bleeding tendency being the most common side effect of acetylsalicylic acid and 129 (28%) were aware of liver damage by paracetamol toxicity. **Conclusion:** In Pakistan, common people take NSAIDs and Paracetamol without prescription and majority of them are unaware of the side effects of these medicines. This is the reason it is important to make the general public aware of the problems they may face if they misuse or over use the drugs without the prescription.

Keywords: Aspirin; paracetamol; Non-steroidal Anti-inflammatory Drugs; Paracetamol; Drug availability; Patients' Preference; Knowledge; Toxicity

J Ayub Med Coll Abbottabad 2016;28(4):746–9

INTRODUCTION

Self-medication, a common practice, is the use of any drug for psychological or medical ailments without prescription.[1,2] In any society it is influenced by level of education of the people, society factors, and medical and health care facilities availability. Most of the times episodes of any illnesses mild or severe, are treated through self-medication or a non-doctor advise in many economically deprived countries. The reason being the non-availability of easy access to doctors, high cost of the medicines prescribed and easy availability of drugs over the counter. Where junior doctors and basic health units shall be the first point of contact for the patients, in low socioeconomic countries like Pakistan it is the pharmacy/drug retail shop which serves as the first approachable thing in the health care system.[3,4]

Among OTC drugs, Paracetamol and aspirin (acetylsalicylic acid) are found to be the most frequently used without prescription which is not only causing public health issues but economic burden due to misuse of unnecessary drug intake.[5–7] The most common indication found through studies for the self-medication of these medications is fever, headaches and body aches.[8] No doubt their significance is indubitable but they have adverse effects too like gastropathy (NSAIDs prevent the formation of COX-1), nephrotoxicity, hepatotoxicity (the parent compound acetaminophen causes centrilobular hepatocyte damage), skin allergies and increased bleeding tendencies.[9–13]

In our region, Pakistan, dengue epidemics are very common and awareness regarding prescription implementation needs to be ensured. The present study was conducted to determine the level of awareness regarding the use of aspirin-paracetamol and their toxicities among the non-medical adults.

MATERIAL AND METHODS

This descriptive study was conducted from May to August 2012 after approval from the ethical committee of the institution in non-medical colleges, Universities and offices in Rawalpindi and Islamabad, Pakistan. Written and informed consent from participants was obtained. A total of 1000 individuals were selected by non-probability convenience sampling technique out of which the satisfactory response was found in 46.7%. Sample size was measured keeping confidence level 95% and margin of error 3%. A questionnaire, comprising of 21 questions (ANNEX: A) was distributed irrespective of gender, to educated individuals of age groups from 18 years to 40 years. Incomplete forms or forms with exclusion question (Q.12), marked

were not analysed. Data was entered in Microsoft excel spreadsheets and analysed using descriptive statistics on SPSS version 17.

The questionnaire was distributed to assess the knowledge about drugs, tendency of self-medication, extent of 'demand prescription', tendency of storing the drugs at home for later use, tendency of 'hoarding' of general drugs after the increasing epidemics and endemics in Pakistan. The questionnaire also covered the following aspects; types of drugs commonly used, frequency of their use, knowledge of the correct dosage, indications and contraindications of the drugs, the toxicity profile of the drugs and availability of the drugs.

Question number twelve was for the purpose of the exclusion of poorly answered questionnaire. The question required the reader not to mark the answers as it was to countercheck if the questionnaire was being attentively read and then marked. Five hundred & thirty-three questionnaires got excluded by this method decreasing the chance of bias in the study. Four hundred & sixty-seven questionnaires were included. Data was entered in Microsoft excel spreadsheet and frequencies were determined and results made.

RESULTS

Out of the total 1000, the data was analysed on 467 questionnaires which fully fitted the criteria of inclusion. The data was analysed irrespective of the gender or age group. Out of the total 467, the medicine which was used the most by the responders was Mefenamic acid (n=191, 40.8%). Paracetamol was second on the priority list (n=146, 31.3%). ibuprofen and Aspirin showed little usage, i.e., (n=67, 14.3%) and (n=57, 12.2%) respectively.

About 178 individuals (38.1%) used these medications for headache; other reasons for use were for fever (n=165, 35.3%), body pain/fatigue (n=101, 21.6%) and miscellaneous reasons (n=17, 3.6%). (fig.2). Self-medication was practiced frequently by 116 (24.8%), rarely by 220 (47%), always by 95 (20.3%) and never by 33 individuals (7%).

Only 119 individuals (26%) were aware of the recommended dose of aspirin and paracetamol daily use; the rest of the persons were unaware. Only 50 persons (11%) were aware that a dose greater than 150–500 mg/kg is toxic for humans while 56 (12%) did not consider it toxic at all and 357 (76%) were not sure if it was toxic or not. Only 31 (7%) knew that a dose of 150mg/kg of paracetamol is toxic while 49 (11%) did not consider it harmful at all while 381 individuals (82%) were unaware of the toxicity.

Only 52 individuals (11%) were aware of the raised bleeding tendency being the most common side effect of aspirin and 129 persons (28%) were aware of liver damage being the most common manifestation of paracetamol toxicity. Kidney damage by use of aspirin and paracetamol was considered true by 157 individuals (34%); 48 (10%) considered it false and 129 (28%) were unaware of the fact. 95 individuals (20%) considered use of Aspirin and Paracetamol dangerous to the liver while 59 (13%) did not consider it dangerous and 308 (66%) did not know if it had any effect on liver or not. Two hundred & fifty-four individuals (54%) responded that these medicines are always available at home.

Fifty-one individuals (11%) responded that aspirin can be given in gastric ulcer patients, 331 (71%) did not know if it should be given or not and 99 individuals (21%) knew that Aspirin is contraindicated in gastric ulcers patients. 323 persons (69%) responded that Paracetamol can be prescribed to gastric ulcer patients, 110 (24%) suggested ibuprofen a better option and 107 individuals (23%) considered Paracetamol to be fine as prescription for gastric ulcer patients.

Regarding use of self-medication in pregnancy, out of 467, 89 persons (19%) responded that aspirin and paracetamol are given in pregnancy, 62 (13%) did not consider taking any such drugs during pregnancy safe and rest of 316 individuals (68%) were unaware of the use. One hundred & fifty-seven persons (33.6%) preferred paracetamol in pregnancy while 143 (31%) considered aspirin and 167 (36%) considered ibuprofen to be the drug of choice in pregnancy.

Sixty-three persons (14%) knew the consequences of using NSAIDS during Dengue fever; rest of 404 individuals (86%) were unaware. 33(7%) considered aspirin the drug of choice in dengue while 139 (30%) marked paracetamol safe to be used in dengue affected patients. Rest were unaware (n=295, 63%).

Eighty-three (18%) marked paracetamol as the option for children and aspirin was marked safe by 145 individuals (31%) rest 239 (51%) did not know which drug is safe for the children suffering from fever. Sixty individuals (13%) marked aspirin as the drug of choice for asthma patients. While only 46 (10%) marked paracetamol as the drug of choice. Rest of the 361 individuals (77%) did not know which drug is safe.

A number of skin rash have been reported with overdose of NSAIDs and paracetamol. 77 individuals (16%) out of the total samples considered aspirin causing more allergies and 62 (13.2%) persons responded that paracetamol may cause skin allergic reactions. Majority of the individuals (n=388, 83%) did not know of any allergic reactions occurring by the use of these drugs.

DISCUSSION

In our study, the study population was the educated adults of Rawalpindi and Islamabad, Pakistan and found their knowledge of the daily use drugs to be insufficient for any self-medication. This is alarming as the rest of the segments of the society who are not well educated and have no access to the sources which can help clarify their concepts on these day to day drug usage; are at greater risk of side effects.

Mefenamic acid is found to be most commonly used NSAID than paracetamol as contrary to the study conducted by P. Duncan, [14] but the use of aspirin was lesser than the two in agreement with the study conducted in Nigeria.[15] Febrile children when given aspirin can develop Reyes syndrome so aspirin is contraindicated in febrile children; the fact which was found to be not known to most of the responders in our study. Though the use of aspirin in febrile children is not practiced in the health care units but the self-medication by the parents is still a risk factor which needs to be addressed, as found consistent with many other studies where the use of aspirin is still considered fine for febrile children.[16–18]

Aspirin induces asthma and people suffering from asthma must avoid it, but in our study it was seen that people considered it safe to use aspirin and a large number was totally unaware of the demerits of use of aspirin in asthma as was the case in another study.[19]

In our study, a large number of individuals were unaware of the safe dose for daily use and hence are at the risk of over dose toxicity. This lack of knowledge of lethal dosage of drugs may lead to greater risks of suicides and deaths.[20]

In our study the responders preferred using the medication without prescription and had enough medicines stored at home or work place for daily use when required without the prescription of the doctor as found consistent with another study.[21] In our study the most prevalent cause for taking aspirin and paracetamol was headache which was found contrary to other studies where the frequent self-medication is considered to be done for fever.[22]

Our study highlights an alarming situation in which the educated segment of society has the tendency to self-medication without the adequate knowledge of safe dosage, common side effects and contraindications of NSAIDs and paracetamol. The problem is multiplied by the fact that these drugs are over-the-counter drugs and everyone has easy access to these drugs. With the recent first episode of Dengue fever epidemic in Pakistan, it is need of the time to have rigorous measures and their implementation to improve the awareness of common people about self-medication and use of pain killers.

CONCLUSION

The knowledge about safe dosage, indications, contraindications and side effects of NSAIDs and paracetamol is inadequate in educated adults of Rawalpindi-Islamabad region of Pakistan. The tendency of self-medication and easy availability of these drugs without prescription; in addition to poor literacy rate multiples the need of public awareness about it. Keeping in mind the 1st ever episode of Dengue fever epidemic in Pakistan, the corrective measures are needed to be done urgently.

ACKNOWLEDGEMENT

We are sincerely grateful for the help in data collection by Mohuammad Mazhar, Chaudry Naim Muhammad, Imran Qadir Khan and Mussab Irfan for without their help the process of data collection would have lengthened. We highly acknowledge their contribution in our study.

AUTHORS' CONTRIBUTION

QZ: Substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; Drafting the article or revising it critically for important intellectual content; Final approval of the version to be published. AN: Substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; Drafting the article or revising it critically for important intellectual content; Final approval of the version to be published. ST: Substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; Drafting the article or revising it critically for important intellectual content; Final approval of the version to be published.

REFERENCES

1. http://www.thefreedictionary.com/self-medication
2. Banerjee I, Bhadury T. Self-medication practice among undergraduate medical students in a tertiary care medical college, West Bengal. J Postgrad Med 2012;58(2):127–31.
3. Montastruc JL, Bagheri H, Geraud T, Lapeyre-Mestre M. Pharmacovigilance of self medication. Therapie 1997;52(2):105–10.
4. Martins AP, Miranda Ada C, Mendes Z, Soares MA, Ferreira P, Nogueira A. Self-medication in a Portuguese urban population: a prevalence study. Pharmacoepidemiol Drug Saf 2002;11(5):409–14.
5. McAuliffe WE, Rohman M, Santangelo S, Feldman B, Magnuson E, Sobol A, *et al*. Psychoactive drug use among practicing physicians and medical students. N Engl J Med 1986;315(13):805–10.
6. Lee D. Drug utilization in Panama. J Clin Epidemiol 1991;44(Suppl 2):31S–8.
7. Dong H, Bogg L, Rehnberg C, Diwan V. Drug policy in China: pharmaceutical distribution in rural areas. Soc Sci Med 1999;48(6):777–86.
8. Juha H.O. Turunen, Pekka T. Mäntyselkä, Esko A. Kumpusalo, Riitta S. Ahonen, Frequent analgesic use at

population level: Prevalence and patterns of use. Pain 2005;115(3):374–81
9. David Bjorkman, Nonsteroidal anti-inflammatory drug-associated toxicity of the liver, lower gastrointestinal tract, and esophagus. Am J Med 1998;105(5):17–21
10. Dear, James W., and Daniel J. Antoine. "Stratification of paracetamol overdose patients using new toxicity biomarkers: current candidates and future challenges." Expert review of clinical pharmacology 2014;7(2):181–9.
11. Wilkes JM, Clark LE, Herrera JL. Acetaminophen overdose in pregnancy. South Med J 2005;98(11):1118–22.
12. Higuchi K, Umegaki E, Watanabe T, Yoda Y, Morita E, Murano M, *et al*. Present status and strategy of NSAIDs-induced small bowel injury. J Gastroenterol 2009;44(9):879–88.
13. Wallace JL, Hogaboam CM, Kubes P. Immunopathology of NSAID-gastropathy: inhibitory effects of interleukin-I and cyclosporin A. Ann N Y Acad Sci 1992;664:400–7.
14. Lee WM. Drug-Induced Hepatotoxicity. N Engl J Med 2003;349(5):474–85.
15. Duncan P, Aref-Adib G, Venn A, Britton J, Davey G. Use and misuse of aspirin in rural Ethiopia. East Afr Med J 2006;83(1):31–6.
16. Agaba EI, Agaba PA, Wigwe CM. Use and abuse of analgesics in Nigeria: a community survey. Nig J Med 2004;13(4):379–82.
17. Nyamongo IK. Home case management of malaria: an ethnographic study of lay people's classification of drugs in Suneka Division, Kenya. Trop Med Int Health 1999;4(11):736–42.
18. Nshakira N, Kristensen M, Ssali F, Whyte SR. Appropriate treatment of malaria? Use of antimalarial drugs for children's fevers in district medical units, drug shops and homes in eastem Uganda. Trop Med Int Health 2002;7(4):309–16.
19. English M, Marsh V, Amukoye E, Lowe B, Murphy S, Marsh K. Chronic salicylate poisoning and severe malaria. Lancet 1996;347(9017):1736–7.
20. Jenkins C, Costello J, Hodge L. Systematic review of prevalence of aspirin induced asthma and its implications for clinical practice. BMJ 2004;328(7437):434–7.
21. Gunnell D, Hawton K, Murray V, Garnier R, Bismuth C, Fagg J, *et al*. Use of paracetamol for suicide and non-fatal poisoning in the UK and France: are restrictions on availability justified? J Epidemiol Community Health 1997;51(2):175–9.
22. Ali SE, Ibrahim MI, Palaian S. Medication storage and self-medication behaviour amongst female students in Malaysia. Pharm Pract (Granda) 2010;8(4):226–32.
23. Hussain S, Malik F, Hameed A, Ahmad S, Riaz H. Exploring health-seeking Behavior, medicine use and self-medication in urban and rural Pakistan. South Med Rev 2010;3(2):32–4.
24. Hassan NW. Medical knowledge and attitude of patients, a survey. J Pak Med Assoc 1981:31(7):146–8.

Received: 30 July, 2015	*Revised: 25 October, 2016*	*Accepted: 3 November, 2016*

Address for Correspondence:
Quratulain Zamir, Army Medical College, National University of Medical Sciences (NUMS), Islamabad-Pakistan
Email: qurat_aini@hotmail.com