

A QUESTIONNAIRE BASED SURVEY STUDY FOR THE EVALUATION OF KNOWLEDGE OF PAKISTANI UNIVERSITY TEACHERS REGARDING THEIR AWARENESS ABOUT IBUPROFEN AS AN OVER THE COUNTER ANALGESIC

JIANXIAN CHEN^{1#}, GHULAM MURTAZA^{2#*}, NIDA NADEEM², XIAOKUAI SHAO³, BUSHRA G. SIDDIQI², ZAINAB SHAFIQUE², SAEED AHMAD⁴, SEYYEDA T. AMJAD², SAIMA HAROON², MAMOONA TANOLFI² and MEI ZHOU^{5*}

¹School of International Trade and Economics, University of International Business and Economics, 100029, Beijing, China

²Department of Pharmaceutical Sciences, COMSATS Institute of Information Technology, Abbottabad 22060, Pakistan

³Graduate School of the Chinese Academy of Social Sciences, 102488, Beijing, China

⁴Department of Pharmacy, Islamia University of Bahawalpur, Bahawalpur, Pakistan

⁵College of Science, North China University of Technology, 100041, Beijing, China

Abstract: In recent time, due to convenient availability of number of over the counter (OTC) drugs, patients are able to treat minor ailments by themselves. The self-medicated regimen has lead to certain health problems in all age groups irrespective of their professions. People are usually unaware about the safe use of NSAIDs (non-steroidal anti-inflammatory drugs) and currently there is no study carried out in COMSATS Institute of Information Technology (CIIT), Abbottabad, regarding the choice of faculty members for NSAIDs to relieve pain and their knowledge about its safety and use. A questionnaire based survey was carried out to collect data about the choice of CIIT faculty for a specific NSAID and their cognition related to ibuprofen. Two hundred fifty faculty members (comprising of 53 pharmacy faculty members and 197 faculty members who belonged to other departments) of which 87 were females, took part in this study. Average age of participants was 34.86 ± 9.02 years. Ibuprofen was the drug of choice NSAID among the participants. Four percent participants experienced pain almost every day. Analgesia was the well known indication for ibuprofen (31%) by both the groups and in general more educated and younger participants showed better apprehension related to indications. Sixty one percent participants comprising of non-pharmacy faculty were unaware of any undesirable effects and 79% (comprising of 72% pharmacists and 5% non-pharmacists) were affirmative that ibuprofen had no adverse effects. Fifteen percent participants of department other than pharmacy were not aware of any interactions of ibuprofen. 34% of participants (comprising of 32% non-pharmacists and 2% pharmacists) entrusted their physician for an analgesic. Regardless that many participants suffered from pain almost every day and their drug of choice would be ibuprofen, they had inadequate information related to the safety and use of ibuprofen.

Keywords: ibuprofen, self-medication, knowledge, survey, over the counter

It has been detailed in a previous study that 38% participants consumed OTC drugs. It was observed that many of them used a non-prescription drug (at most one) along with other prescribed medicines. Although OTC oral pain-killers show potential side effects, yet they are most popularly used by a majority of population (1, 2). A cohort-survey analysis conducted among these people indicated higher risk for ulcers compared to non-users of NSAIDs and the risk for ulcers increased with the

increased use of NSAIDs. Bleeding as a result of peptic ulcer is commonly caused by intake of NSAIDs. Forty three percent patients used NSAIDs most frequently for muscles and skeletal pain. Elderly people are more prone to damage and adverse effects caused by OTC NSAIDs due to multiple drug regimen and alterations in the pharmacokinetics of drugs due to their age (1–4).

In Pakistan, ibuprofen is manufactured under different brand names, by different pharmaceutical

* Corresponding author: e-mail: meizhou2001@gmail.com; gmdogar356@gmail.com. phone: 00923142082826; fax: 0092992383441

These authors contributed equally to this work.

manufacturers and is dispensed as an OTC drug as well as a prescription drug. Various ibuprofen strengths for oral use are available. Oral dose of ibuprofen is available in strengths of 200 mg and 400 mg. For children, ibuprofen suspension is available and for topical use it is available as creams and gels. Ibuprofen should not be used by an adult for more than a week without physician's advice (5).

In a previous research on OTC ibuprofen, respondents were asked about their use of medicines that contained ibuprofen as an OTC drug. Among them, most of the respondents had been repeatedly using ibuprofen. One third of the people who used ibuprofen for the first time consulted a physician prior using it (6). Another study (7) focused on the level of information of those who bought OTC ibuprofen. The statistical data of study showed that 38% people who used ibuprofen, never asked any information about it. For those who used it for the first time, their information regarding its undesirable effects and contraindications was 28% compared to that of repeated users of ibuprofen, who were one half of the total. In spite of a lack of information about ibuprofen, a majority of users in both the groups indicated to have sufficient information about ibuprofen.

COMSATS Institute of Information Technology (CIIT), besides its principal campus at Islamabad, has 9 other fully functional campuses in different cities of Pakistan including that at Abbottabad. CIIT has 17 departments and 6 research centers. CIIT ranks first among the IT universities of Pakistan, sixth in research and productivity and ninth among all the higher education institutes of Pakistan recognized by HEC. CIIT Abbottabad was established in 2001 with student strength of 121. Now it has student strength of 5560 with 15 undergraduate programs and a total of 463 faculty members (8).

The objective of this survey was to highlight the preference of faculty members in CIIT Abbottabad for a particular OTC drug along with their knowledge about its safety, contraindications and adverse effects for ibuprofen in particular.

EXPERIMENTAL

We carried out a cross-sectional survey study in the COMSATS Institute of Information and Technology, Abbottabad (CIIT) in Pakistan. The data were collected from all faculty members of all the departments including Pharmacy, Computer Sciences, Environmental Sciences, Earth Sciences, Humanity, Chemistry, Geology, Power Engineering, Electrical Engineering, Civil Engineering,

Computer Engineering, and Electrical Engineering. We requested all faculty members to participate but only 250 persons (comprising of 53 pharmacy faculty members and 197 faculty members who belonged to other departments) agreed to participate in this survey study, which was to get an idea about awareness of people regarding use of ibuprofen as an analgesic. In this survey study, the age group of participants was 30 to 39 years. We requested them to fill the questionnaires. The study was completed within 3 weeks very effectively. We also interviewed the faculty members about ibuprofen and its self administration (9). There were 18 questions consisting of three sections including socio-demographic and economic data (age, gender, education, and income), pain frequency and localization information about ibuprofen (Table 1). We also asked about whether they knew about its adverse effects, contraindications and sources of information. There were 7 closed questions and 11 open ended questions (1). We did not ask about their residence. This questionnaire provided an opportunity to the respondents to share their awareness about ibuprofen without any hesitation and they were also allowed to choose multiple answers.

Data analysis

Mean and standard deviation were used to provide a rapid access to metric variables. Education and knowledge included in ordinal data was identified using Kendall's regression, which is used for correlation. The results are presented in a combined form as there were no significant differences among all departments' participants (10).

RESULTS AND DISCUSSION

We studied about 250 faculty members (comprising 53 pharmacy faculty members and 197 faculty members who belonged to other departments). Most (65%) of them were males, while 35% were females. The mean age for both was 34.86 ± 9.02 years. The other sample characteristics are summarized in Table 2. Six percent pharmacy professionals and 4% faculty of other departments stated they suffered from pain nearly every day and 38% of participants (of which 16% were pharmacists) almost never experienced pain (Table 3). The head and back were the most common sites of pain, i.e., 24% and 19%, respectively. When we asked how they manage pain, 34% of respondents (comprising 32% non-pharmacists) stated that they visited a physician and bought the prescribed medicine. Other 38% (all were pharmacists) reported they had been purchas-

Table 1. Questionnaire used in this survey study.

No.	Parameters and their choices					
1	Sex					
	Man	Woman				
2	What is your age?					
3	Your highest level of education?					
	Primary	Middle	High	12 years	14 years	
	16 years	M.S./M. phil.	Ph.D.			
4	What is your net monthly income (Rupees)?					
	0-5000	5000-9999	0,000-14,999	15,000-19,999	Over 20,000	
5	Are you taking health related lectures? (Multiple answers)					
	No	Yes (Physician)	Yes (Pharmacist)	Other, what?		
6	Are you suffering from any pain?					
	Almost never	Less than once a month	About once a month	Several times a month but not every week	At least one day a week	Almost every day
7	For what pain you ever worry? (Multiple answers)					
	Head	Back	Crosses	Joints	Muscles	Teeth
	Abdominal	Other, what?				
8	When treating pain usually (multiple answers)					
	Ask your doctor to prescribe you something	Buy yourself an OTC drug without prescription	Heal by themselves with herbs, etc.	Heals by your relatives / friends / acquaintances	Alternative to what?	
9	OTC medication for pain (without prescription) can be bought from a pharmacy/medical store on the advice of: (multiple answers)					
	Doctor	Pharmacist	Known by television, radio, magazine or newspaper	Other, what?		
10	If you buy an OTC drug for pain (without a prescription), you get advice about its use from: (multiple answers)					
	Doctor	Pharmacist	Read the leaflet	You ask relatives / friends / acquaintances	Alternative to what?	
11	Which OTC drug you prefer to treat pain? (Multiple answers)					
	Panadol	Valetol	Brufen (Ibuprofen)	Voltral	Nalgesin	Aspirin
12	Ibuprofen is a major component of dosage regimen for: (multiple answers)					
	Pain	Fever	Inflammation	Sleeping	Of something else, what?	
13	If you purchase medicine containing ibuprofen (Brufen) your pharmacist asks you what other medications you are taking:					
	Always	Sometimes	Never	Another way, what	Cannot buy medication containing ibuprofen	
14	If you purchase medicine containing ibuprofen (Brufen), pharmacist tells you: (multiple answers)					
	Maximum daily dose	For use with / after meals	To drinking sufficient amount of water	About drugs which should not be combined with ibuprofen	About how to store the drug	About the cost of medication
	About nothing	Of something else, what?				
15	Medications containing ibuprofen:					
	No side effects	Have very few side effects	Can have serious side effects	Not know		
16	If you know any side effects or any medication or illness in which the ibuprofen should not be used, you come to know about it through: (multiple answers)					
	From doctor	From pharmacist	Through television, magazines	From relatives / friends / buddies	Otherwise, how?	I do not know
17	Do you know any side effect of ibuprofen (Ibalgin, Brufen, Apo-Ibuprofen, Ibumax)?					
	No, I donot know	Yes, I know; what?				
18	Medications containing ibuprofen should not be used by people receiving: (multiple answers)					
	Antidepressants	Blood pressure	Blood thinners	Medicines for diabetes	I do not know any of the options	Other option, what?

ing medicine from a pharmacy on their own behalf. Regarding the active ingredient in the pain medication, participants that preferred medicines containing ibuprofen were 31% (comprising 10% pharmacists), followed by Panadol® 46% (comprising 6% pharmacists) and aspirin 15% (comprising 3% pharmacists). The drug ibuprofen was chiefly regarded as the analgesic. Only small number of people (33% with 31% pharmacists) know the fact that ibuprofen has other uses besides relieving pain; it is also used as antipyretic and anti-inflammatory drug. About 7% of non-pharmacists respondents believed that it was hypnotic drug, whereas 55% of non-pharmacists respondents didn't have any idea about the drug, how and when to use it. There was a correlation between the clinical uses of ibuprofen and the level of education. Correspondingly, 40% young adults (from all departments) had more information about the use of ibuprofen.

The respondent's knowledge about adverse effects and drug interactions was mainly deficient. Most participants said that they had no knowledge about the side effects of drug (ibuprofen). About 79% of participants (non-pharmacists only) reported that ibuprofen had no adverse effects whereas 21% (comprising 5% non-pharmacist) had knowledge about the potential side effects of the drug. Elderly

participants regarded the adverse effects of the drug to be less important than the younger subjects. Few subjects reported particular side effects (GI upset), likewise, there was deficient information about interaction of ibuprofen with other drugs like the interaction involved with medicines for high blood pressure and blood thinners.

While purchasing OTC (over the counter) drugs, subjects reported that they mainly followed physician's advice. Subjects that relied on pharmacist's recommendation were 18% (comprising 5% non pharmacists), 38% of subjects (comprising 34% non-pharmacists) said that physician was a reliable source of information about OTC drugs and 65% of participants (all were non-pharmacists) did not had pharmacist's counseling. There were no other effects of demographic factors on the results. The majority of respondents relied on physician's advice regarding knowledge about side effects and contraindications. The other sources of information were print/electronic media and relatives/friends. Only 25% of subjects (comprising 20% pharmacists) mentioned pharmacist as a source of information.

Our study concluded that most of the people suffered from headache and back pain, i.e., 24% and 19%, respectively. About 34% of people consulted

Table 2. Socio-demographic and economic features of respondents.

Characteristics	Limits	Total respondents		Pharmacy faculty		Faculty other than pharmacy	
		Number of cases	Percentage	Number of cases	Percentage	Number of cases	Percentage
Age (Years)	20–29	75	30	10	20	65	33
	30–39	108	43	28	56	80	41
	40–49	50	20	10	20	40	20
	> 50	17	7	5	10	12	6
Gender	Male	163	65	41	82	122	62
	Female	87	35	12	24	75	38
Education	14 years	0	0	0	0	0	0
	16 years	45	18	8	16	37	19
	M.S./M. Phil.	128	51	34	68	94	48
	Ph.D.	77	31	11	22	66	34
Income (Pakistani Rupees)	0–5000	0	0	0	0	0	0
	5000–9999	0	0	0	0	0	0
	10,000–14,999	0	0	0	0	0	0
	15,000–19,999	0	0	0	0	0	0
	> 20,000	250	100	250	100	250	100

Table 3. Number of subjects who reported pain.

Self reported pain frequency	Number of cases		
	Total respondents	Pharmacy faculty	Faculty other than pharmacy
Almost never	22	16	22
Less than once a month	20	29	20
About once a month	21	20	21
Several times a month/not every week	26	18	26
At least one day a week	8	11	8
Almost every day	4	6	4

physician for their problems as they think that physician can provide them the most reliable information about their relevant problem, adverse reactions of drug they are using and the risk factors. Thirty eight percent of respondents reported that they had been purchasing medicine from pharmacy. A majority of the faculty members preferred Panadol (46%) and ibuprofen (31%) to relieve the pain. People in our study did not have much knowledge about ibuprofen, its use, its adverse effects and consequently the risk factors. Faculty members of middle age had more knowledge about our relevant drug than the older members, while more side effects seemed to have occurred in the elder population of the faculty.

This study reflects the same results as other pain related studies carried out in different parts of the world. As reported by rural health study published recently, people above 50 years experienced pain. This study (14) shows that people suffering from chronic pain of back and joints were about 70–83%. Almost all people under study experienced acute pain. Most of the respondents of old age complained about their chronic pain and most often of back pain, joint pain and leg pain (15). Similarly, another study (16) conducted about 10 years ago in a few European countries showed that people ranging in 40–60 years of age experience chronic pain as compared to other people. There are some views of self medication study encouraged by a NGO in Australia (9); the topic was how much pharmacy clients know about ibuprofen and mostly females below 50 were studied. Large fraction did not give correct answers, as they do not have knowledge about ibuprofen use, its adverse effects, etc. Most of them do not even bother to study the leaflets. The same case occurred in Jordan (8), where patients do not have the basic information about the non-steroidal anti-inflammatory drugs and also about their side effects.

Usually elder people suffer with several diseases at one time; hence administering 5–6 medicines at a time. If such people use ibuprofen (NSAID's) for pain relief, it can be harmful for them because their body undergoes some pathological changes, so in this way they are unaware of the severe adverse effects related to NSAID's (1). Such patients can suffer from hemorrhage if they are taking antiplatelets, corticosteroids, anticoagulants and SSRI's (selective serotonin reuptake inhibitors). Moreover, patients whose kidneys are not working properly, have experienced cardiac failure, or are taking any medicine that reduces the fluid overload; there is high risk that such patients will experience kidney failure (17, 18).

Our study revealed that almost 34% of people visit a physician for obtaining analgesics. About 38% just directly go to the pharmacy for buying the medicine. The main drawback here is that neither physician nor attendant on pharmacy considers the important patient factors, hence very fatal results are often seen. This is associated with 39% of the cases under study. In this way, patient remains unaware of the severe side effects of ibuprofen, as ibuprofen and Panadol are mainly used as an OTC drugs for pain medication.

The monthly income of each faculty member was above 20,000 Pakistani rupees. In our survey, we did not get much information about the duration of pain, so we can not statistically interpret that how much people suffer from acute and chronic pain. However, we consider that chronic pain was the most problematic pain for the faculty members. Moreover, self study just gives us an idea about the presence or absence of pain, not about its intensity. In our study, there were about 18% pharmacy faculty members that had previous knowledge of health care and about analgesics, the rest including engi-

neering, management sciences, environmental sciences, developmental studies, geography and earth sciences faculty members were unaware of the basic knowledge regarding analgesics.

LIMITATION

The limitation of this survey based study is its small sample size. However, such study involving large sample size can be carried out.

CONCLUSION

It is concluded that a majority of the faculty members (61%) were lacking basic information about the OTC drugs and also they consider ibuprofen as the safest drug having no potential side effects. Thus, there is a need that such people should take health lectures, so that they gain useful information regarding the possible reactions of drugs with food and other drugs, side effects on health and the risk factors.

Acknowledgment

Authors thank Petra Matoulkova for providing help in the constitution of questionnaire used in this study.

REFERENCES

1. Matoulkova P., Dosedel M., Ryzkova B., Kubena A.: *Acta Pol. Pharm. Drug Res.* 70, 333 (2013).
2. Rolita L., Freedman M.: *J. Gerontol. Nurs.* 34, 8 (2008).
3. Shah S.N.H., Ilyas M., Azhar S., Murtaza G.: *Latin Am. J. Pharm.* 32, 191 (2013).
4. Ullah H., Khan S.A., Bakht S.M., Tehseen Y., Karim S. et al.: *Latin Am. J. Pharm.* 31, 1367 (2012).
5. *Pharmaguide* by PharmEvo, Drug Indexing Publisher, Lahore, Pakistan 2012.
6. Macesokova B.: *Ceska Slov. Farm.* 51, 6, 292 (2002).
7. Macesokova B.: *Ceska Slov. Farm.* 74, 2, 18 (2002).
8. Albsoul-Younes A.M., Jabateh S.K., Abdel-Hafiz S.M., Al-Safi S.A.: *Saudi Med. J.* 25, 907 (2004).
9. Ngo S.N.T., Stupans I., Leong W.S. et al.: *Int. J. Pharm. Pract.* 18, 63 (2010).
10. Zullo A., Hassan C., Campo S.M.: *Drugs Aging* 24, 815 (2007).
11. Arroyo M., Lanás A.: *Minerva Gastroenterol. Dietol.* 52, 249 (2006).
12. Murtaza G., Rehman N.U., Khan S.A., Noor T., Bashir D. et al.: *Latin Am. J. Pharm.* 31, 958 (2012).
13. Mobily P.R., Herr K.A., Clark M.K., Wallace R.B.: *J. Aging Health* 2, 139 (1994)
14. Khan H.M.S., Murtaza G., Usman M., Rasool F., Akhtar M. et al.: *Afr. J. Pharm. Pharmacol.* 6, 1805 (2012).
15. Azhar S., Hassal M.A.A., Murtaza G., Hussain I.: *Latin Am. J. Pharm.* 31, 368 (2012).
16. Breivik H., Collett B., Ventafridda V. et al.: *Eur. J. Pain* 10, 287 (2006).
17. Malek J., Prikazsky V., Danova J.: *Bolest* 6, 113 (2003).
18. Hurwitz N.: *Br. Med. J.* 1 (5643), 536 (1969).

Received: 03. 05. 2013