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PUBLIC HEALTH | RESEARCH ARTICLE

Poor knowledge of university students regarding paracetamol; a wakeup call for public healthcare practitioners

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Abstract: Over-the-counter (OTC) use of paracetamol has drastically increased over the past few decades. Its toxicity is the foremost cause of acute liver failure in the Western world, unfortunately such cases remain undocumented in underdeveloped country like Pakistan. So far very limited studies have been reported in Pakistan, which have tackled issues related to toxicity and knowledge among public regarding OTC medicines at the national level. We assessed the prevalence of self-medication, level of awareness and knowledge regarding OTC medicines (specifically paracetamol), 352 university students through structured interview method. Awareness was scored by a ranking questionnaire. Data was coded and statistically analyzed using SPSS© 21. The survey questionnaire covered the risk perception, prevalence of self-medication and practices regarding OTC medicine use among the university students. Our results offer an indirect assessment of the knowledge among our general population as well as an estimation of misuse related harmful impact of OTC medicines. Moreover, it point out a major knowledge gap, low risk perception and significant prevalence of self-medication with paracetamol among our population, illustrating an increased potential of its adverse effects through

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Maham Tariq is the final year student of Doctor of Pharmacy. She has special interest in public health and public related research in terms of drug use. She aims to extend her work to address the issues of Asian population in relation to the rational use of drug. Corresponding author of this article is Professor of Pharmacy in Quaid-e-Azam University, Islamabad Pakistan. His recent research is multidisciplinary and projects involve public health. Nanoparticulate drug delivery systems, biomedical applications of stimuli-responsive materials, theranostics, anti-leishmanial drugs formulations, and intervention based Pharmacy Practice at national and community level. This study has a broader aspects of serving as an indirect estimation of irrational use of OTC drugs among our total population. It also provides basis for further studies regarding incidences of paracetamol induced toxicity and deaths which has been neglected so far in Pakistan.

PUBLIC INTEREST STATEMENT

Increased access and use of the over-the-counter (OTC) drugs in developing countries, coupled with lack of knowledge and awareness about proper use of these medications can lead to potential harmful effects. Paracetamol is the most extensively used OTC analgesic and antipyretic drug which has reported to be taken most inappropriately. Paracetamol toxicity is over burdening the healthcare systems worldwide. In developed countries there are a lot of studies published related to the incidences of paracetamol induced liver toxicity and deaths reported at hospitals, unfortunately such kind of data is not published in Pakistan. Owing to the fact of low literacy rate among majority of our population we choose to assess the prevalence of self-medication, level of awareness and knowledge regarding paracetamol among educated adults (University students). Poor knowledge, low risk perception and high prevalence of self-medication among University students shows increased potential of irrational and misuse among our general population.

overuse or misuse. These findings reveal a substantial need for educational intervention around OTC medicines. Serves as an eye opener for healthcare practitioners who should be proactive in commencing health awareness programs as well as superintending the irrational OTC drug use among public.

Subjects: Public Health - Medical Sociology; Health & Illness; Personal, Social & Health Education; Health and Social Care; Public Health Policy and Practice; Medicine, Dentistry, Nursing & Allied Health

Keywords: paracetamol; over-the-counter drugs; adolescent knowledge; self-medication; public awareness; side effects

1. Introduction

Worldwide, self-medication has been a rising trend and irrational use of the over-the-counter (OTC) drugs is a cause of great concern for public health agencies (Kumar et al., 2013; Wazaify, Shields, Hughes, & McElnay, 2005). In modernistic years, innumerable drugs have been available on an over the counter basis, inclusive of the drugs that were available merely through prescription in the past (Brass, 2001). Conforming to the previously published studies, an increased confidence is found in general public regarding the self-treatment with OTC medicines over the passage of time. People believe that only safe medicines are legitimate to be sold without prescription and OTC medicines usually do not have serious side effects (Panero & Persico, 2016). One of the major class of medicines distributed via over-the-counter sale is OTC analgesics, including NSAID and paracetamol which are exceptionally popular and extensively used (Wilcox, Cryer, & Triadafilopoulos, 2005 Nov; Wiliński et al., 2015). Paracetamol is most widely used as first-line pharmacotherapy for combating pain disorders of different origin and pyrexia (Wiliński et al., 2015). Owing to its remarkable analgesic and antipyretic properties, paracetamol is considered as safe and effective treatment for several medical conditions (Fontana, 2008). However, OTC analgesics are reported to be taken most inappropriately, with potential health hazards. Moreover, users were found unaware of their possible adverse side effects (Wiliński et al., 2015). Unfortunately, paracetamol is a dose-dependent fatal hepatotoxic agent that can cause acute hepatocellular injury leading to centrilobular necrosis (Hinson, Roberts, & James, 2010). Paracetamol overdose is a preeminent cause of hepatotoxicity, which is a substantial problem and contributes significantly to intensive care unit admissions as well as cost of hospitalization (Brass, 2001). Paracetamol has become the most significant cause of ALF—a devastating disorder that is triggered by increase in plasma aminotransferase ALT/AST levels (Hinson et al., 2010; Jalan, Williams, & Bernuau, 2007). Many of such patients develop cardiopulmonary disorders, increased risk of renal complications (up to 2.5 times) and advanced multi-organ failure (Fontana, 2008; Twycross, Pace, Mihalyo, & Wilcock, 2013), eventually resulting in the death of more than 85% of the patients with poor diagnosis and are deprived of liver transplantation (Wazaify et al., 2005).

Paracetamol is the most frequently used OTC drug in deliberate self-poisoning (Hawton et al., 1995). Paracetamol poisoning can occur at recommended therapeutic doses and multiple therapeutic or supra therapeutic doses (Lubel, Angus, & Gow, 2007). An alarming concern in recent years is that, unintentional overdose, rather than intentional overdose have been the main cause of paracetamol induced ALF (Jalan et al., 2007). In such cases toxic effects are developed through the consumption of smaller amounts of paracetamol but for a very prolonged period of time, usually for pain relief to treat toothache, chronic backache, or headache (Schjødt, Rochling, Casey, & Lee, 1997). One of the most distressing factors accounting for paracetamol toxicity includes scarce knowledge among the users regarding specific symptoms that an overdose might have and the timing of such effects (Hawton et al., 1995).

Various studies conducted amidst the Western countries assessing users' knowledge and behaviors towards paracetamol have high lightened poor knowledge, misunderstanding of the API and incomprehension of instructions by them (Boudjemai et al., 2013). Paracetamol toxicity is becoming a factual load on health care systems around the globe (Gyاملani & Parikh, 2002) and one the most

common cause of ALF in Western countries as well as its prevalence appears to be increasing with time (Fontana, 2008). Among the few eminent developed countries including USA, UK and Australia paracetamol tends to be the second leading cause of toxic drug ingestions (Gyamlani & Parikh, 2002), strong association with high level of diseases, deaths and its toxicity related with alcohol abuse respectively (Schjødt et al., 1997).

Various studies done in Pakistan related to self-medication shows contentment among people in terms of self-medication with paracetamol (Ghumman et al., 2013) and high prevalence of self-medication among educated adults (Zafar et al., 2008). Majority of the users select paracetamol for self-management of headache (Ghumman et al., 2013). A recent study conducted in Pakistan compared the drug availability, patient preference and knowledge of toxic levels between Non-steroidal anti-inflammatory drugs and paracetamol shows poor awareness of the side effects and high preference of their use without prescription (Zamir & Nadeem, 2016). Unfortunately there is also lack of published data related to incidences of paracetamol toxicity and other OTC analgesics, which is becoming an alarming situation for public health departments of Pakistan. Absence of such data deprives us from estimating the knowledge and perception level of our population regarding OTC medicines.

This study aims to gauge the awareness, explore the perceptions and knowledge among educated adults (university students) regarding the most common OTC analgesic 'Acetaminophen' available with a brand name of panadol and paracetamol. University students were selected for this study because the authors wanted to emphasize the fact that even the educated adults of the community has not sufficient information regarding the OTC drugs. Moreover, the authors believe, that lack of knowledge among the community members could be one of the biggest reasons of the misuse of OTC drugs. Our results offers an indirect estimation of likelihood of overuse and misuse among our general population (which is not well educated) via the knowledge level of educated adult users (university students).

2. Methodology

2.1. Ethical approval

A cross-sectional study design was used to elaborate the study data. This study received approval from the ethical committee of the universities in which the study was conducted. Written and verbal consent was also obtained from the patients prior to the commencement of the study. Participants were informed that the questionnaire was about OTC medicine "panadol" in a brain storming session.

2.2. Participants and setting

The questionnaire was piloted in a small sample of university students ($n = 10$) to establish its reliability and appropriateness, however this data was not included in the analysis. The study was conducted in various universities of Islamabad Pakistan including, Quaid-e-Azam University, National University of Science and Technology (NUST), COMSATS and Air University (four study sites in total), which are among the top representative universities of Pakistan. Participants were of undergraduate, masters, MPhil and PhD level. The study took place in between November 2014 and January 2016.

The inclusion criteria comprised of participants with 18 years or above age, undergraduate and graduate level students and their willing to participate in the study. Exclusion criteria were health sciences students. There was no control group. The method was followed according to the article "Societal perspective on over the counter drugs" with some modification (Wazaify et al., 2005). Word 'panadol' has been used in place of 'paracetamol' in methodology and result section as it is the brand name of paracetamol which is commercially available.

2.3. Procedure

Students meeting the inclusion criteria were encouraged to participate after the brain storming session. Data collection was done by face-to-face interview from 352 participants by the principal investigator.

2.4. Instrument to assess drug use

Previous study has demonstrated a better conception about prevalence of medicine by using a questionnaire consisting drug precise questions (Helena, Sofia, & Nuno, 2009).

2.5. Data collection form

Questionnaire was developed after survey of different studies done on knowledge perception, literature review and consensus of the experts (professors). Four main knowledge variables related to, (1) dose, (2) side effects, (3) uses and (4) knowledge regarding different brands were selected to be measured in addition to data related to general practices and attitudes regarding paracetamol. The questionnaire consisted of 20 closed ended questions including demographic data and mainly divided into two following sections.

2.5.1. Demographic data

Participant's demographic data was taken including name, age and gender in order to assist with data interpretation and analysis.

2.5.2. Section 1

In first section, practice and attitudes of the participants were observed towards this OTC medicine, which included the type of Panadol they used (Normal, Extra, CF), recommendations, medical conditions in which they prefer its use, habit of pain tolerance prior to Panadol intake using Wong-Baker FACES Pain Rating Scale, method of procurement, management of pain (if) occurring even after one dose of Panadol, frequency of its usage, instruction reading habits, likelihood of dependency upon it and their opinion about basic education regarding OTC medicines among public of Pakistan.

2.5.3. Section 2

In this section individual's knowledge was tested with each question carrying certain marks, multiple choices were given in order to make them convenient to answer. Questions included in this section were regarding the potency of Panadol, maximum dose recommended in 24 h, side effects, possible outcome of suicidal ingestion of Panadol, medical conditions in which its use is not indicated and enlisting its three clinical uses.

2.6. Scoring of the participants

All the questionnaires were evaluated and marked out of 10. Marks obtained by them assessed their level of knowledge as poor (5 and below marks), satisfactory (6 marks), average (7 marks), good (8 marks) and excellent (9 marks or above).

2.7. Statistical analysis

Descriptive statistics were used to describe demographic and knowledge scores. Percentages and frequencies were used for the categorical variables. Responses were statistically analyzed in SPSS version 21, Chi square test were used to test for significant differences between groups ($p < 0.05$).

3. Results

3.1. Demographics

The study included 352 individuals, out of which 180 were females (50.6%) and 172 were males (48.3%); Participants ages ranged from 18 year and above.

Figure 1. Frequency of types of panadol used.

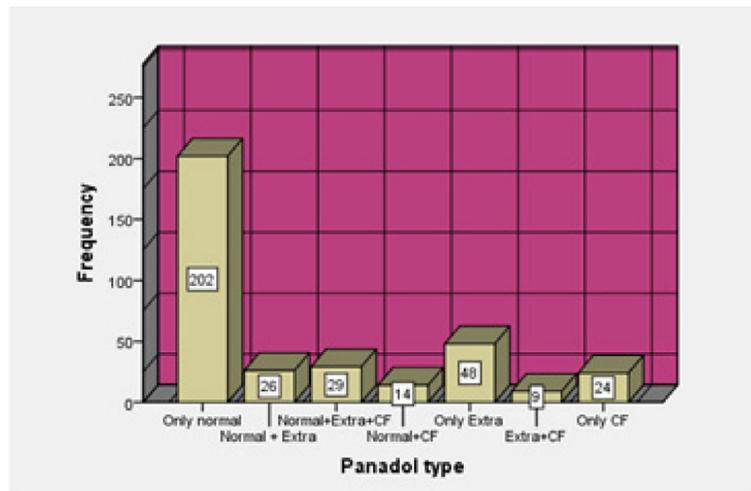
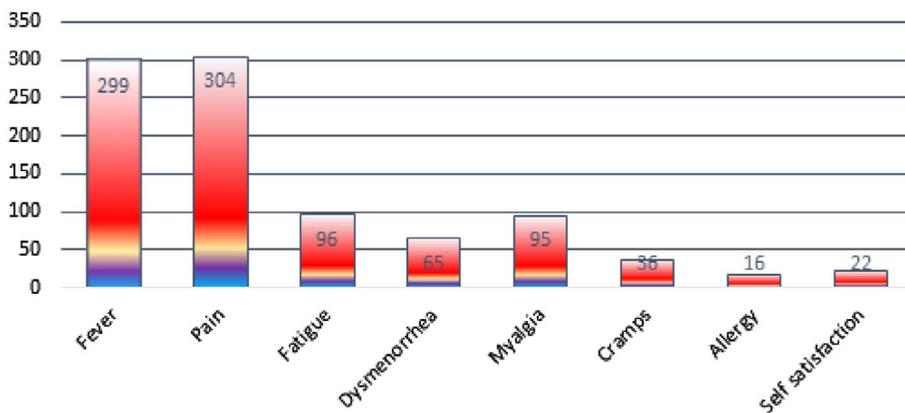


Figure 2. Frequency of panadol used in various medical conditions.



3.2. General practice

The study showed variance regarding the use of three types of Panadol (Normal, Extra, CF) among individuals, given in Figure 1, which was being used in various medical conditions, fever being the most common, followed by pain, fatigue, myalgia, dysmenorrhea, cramps, used for self-satisfaction, given in Figure 2. A pain scale was given to mark the pain which they could endure before taking a Panadol, minimum was 2 and maximum was 10 with a mean of 6.70 and SD ± 2.085, given in Table 1. Upon asking participants their next step in case, if the pain persists even after taking one Panadol, $n = 157$ (44.1%) would take multiple doses of Panadol, $n = 153$ (43.0%) would visit the doctor and $n = 42$ (11.8%) said that they would rather switch to some other medicine. Dependency upon Panadol among participants is given in Table 2.

Table 1. Pain endurance prior to Panadol intake

Pain endurance	Frequency	N (%)
2 (Hurts little bit)	22	6.3
4 (Hurts little more)	42	11.9
6 (Hurts even more)	123	34.7
8 (Hurts whole a lot)	122	34.7
10 (Hurts worst)	43	12.2
Total	352	100

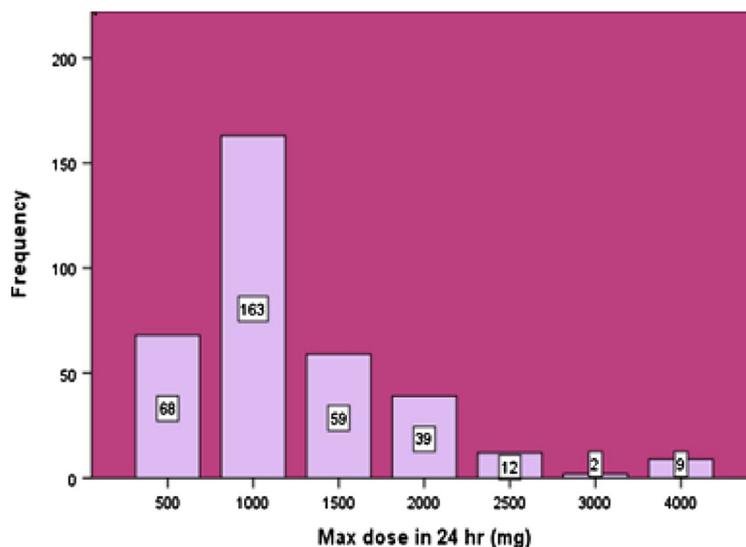
Table 2. Procurement of paracetamol among participants and frequency of its use

Questions	Answers	N (percentage of respondents)
Frequency of using panadol	Daily	1.1
	Weekly	6.0
	Seldom (as per requirement)	77.0
	Monthly	5.9
Number of correct uses answered	1	25.28
	2	43.75
	3	30.96
Dependency upon panadol	Yes	9.94
	No	70.74
	Sometimes	19.32
Purchase of panadol	OTC	91.76
	OTC+ prescription	0.85
	Prescription	7.39
Education regarding OTC medicines in Pakistan	Yes	3.98
	No	96.02
Potency of panadol	10 mg	20.20
	50 mg	25.30
	100 mg	26.40
	500 mg	28.10
Not an indication to use panadol	Headache	0.9
	Toothache	17.6
	Cramps	13.9
	Angina	67.9
Side effect	Rash	6.0
	Asthma	10.8
	Liver toxic	56.8
	Irritation	26.4
Recommendation	Family	85.22
	Friends	4.26
	Advertisement	4.54
	Doctor only	5.96
Instruction reading habits	Every time	1.13
	First time	6.25
	Never	84.37
	Once in lifetime	8.23

3.3. General attitude

A significantly larger number of respondents $n = 297$ (84.4%) had never read instructions given in the information leaflet in their lifetime, their instruction reading habits are illustrated in Table 2. Marks obtained and instruction read show association with each other ($\chi^2 = 8.473$, $df = 3$, $p < 0.05$). It was revealed that panadol was mostly used upon the recommendation of family followed by friends, advertisement and lastly by the recommendation of physician. Method, procurement of paracetamol among participants and frequency of its use, all these parameters are given in Table 2.

Figure 3. Maximum dose recommended in 24 h.



3.4. Knowledge regarding dose

A knowledge base question regarding potency of panadol was asked, to which one fourth of the individuals (25.0%) correctly answered (500 mg), whereas the remaining (75%) answered it incorrectly. Knowledge of correct potency and marks obtained are highly correlated ($\chi^2 = 9.248$, $df = 3$, $p < 0.05$), shown in Table 2. In our study, we found that only few of the participants $n = 7$ (2.5%) had knowledge regarding the maximum recommended dose of Panadol in 24 h, which is 4 g, whereas majority answered incorrectly $n = 345$ (97.5%) shown in Figure 3. Maximum dose which can be consumed in 24 h shows correlation with the marks obtained ($\chi^2 = 16.162$, $df = 6$, $p < 0.05$).

3.5. Knowledge regarding the side effects

Liver damage is the major side effect of panadol, which was reported correctly by 200 people (56.2%), in our study, while remaining 152 people (43.8%) stated that it may cause irritation, rash or asthma. The knowledge of the accurate side effect show significant correlation with each other ($\chi^2 = 8.076$, $df = 3$, $p < 0.05$), as shown in Table 2. Moreover, in response to the query of suicidal ingestions of paracetamol, majority of the people ($n = 203$; 57.7%) respond that it does not cause death irrespective of the overdose. A small number of people ($n = 28$; 8.0%) stated that it cause immediate death, whereas 121 people (34.0%) answered it correctly by responding that it may cause death due to liver toxicity, if left untreated.

3.6. Knowledge regarding uses of panadol

One to three uses of panadol were given by the respondents and more than half of the people reported that Angina is not an indication for paracetamol use while the remaining responses are given in Table 2.

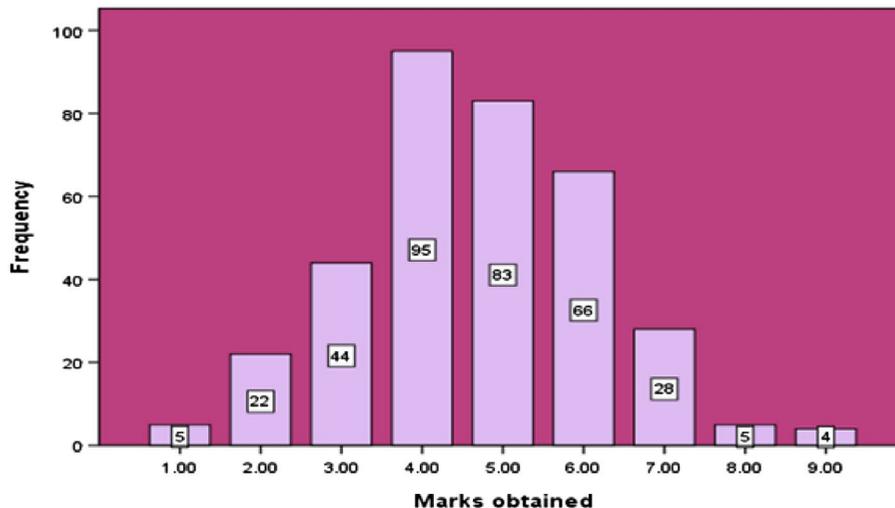
3.7. Knowledge regarding brands

Only 23 people, (6.5%) of the participants were able to correlate Panadol and Acetaminophen, stating that there is no difference between the two and Acetaminophen is the API of Panadol, whereas 48 people (13.3%) reported that they are not same. Moreover, majority of the people ($n = 281$; 78.9%) did not about their correlation. Following an explanation of the difference between the Panadol and paracetamol, just over 60% people (63.5%) knew that they are same, while remaining (35.5%) said they are not the same.

3.8. Knowledge regarding OTC medicines in Pakistan

A significantly large number of individuals ($n = 338$; 94.9%) admitted, that the general public of Pakistan including them, lack adequate knowledge about OTC medicines given in Table 2. At the end

Figure 4. Frequency of marks obtained.



of our study marks scored were evaluated for each individual with minimum 1 and maximum 9 out of 10 with a mean of 4.67 and SD \pm 1.5, as shown in Figure 4.

4. Discussion

The use of OTC medicine such as paracetamol has increased many folds over the past few decades and its toxicity is the foremost cause of acute liver failure (ALF) in the Western world (Fontana, 2008). Unfortunately such cases are left undocumented in Pakistan and so far only few studies have tackled this issue at the national level. Similar knowledge based studies were not been done in Pakistan and therefore little or no information was available regarding knowledge, overuse or misuse of OTC medicines. This study was conducted among university students (educated adults) to get insights into general attitudes and evaluate their knowledge regarding indications, proper use, and potential harmful effects of paracetamol. Our results offer an indirect estimation of misuse related harmful impact of OTC medicines and assessment of the OTC drugs knowledge among our general population. Prevalence of self-medication with paracetamol among our population appears to be very high. Results of this study points to a lack of awareness and potential for overuse or misuse among our population regarding paracetamol as well as OTC medicines in contrast to the level of awareness in various countries such as USA, UK, France, India, Ireland, Belgium and Australia (Dengler & Roberts, 1996; Hawton et al., 2001; Helena et al., 2009; Hornsby, Whitley, Hester, Thompson, & Donaldson, 2009; King et al., 2011; Kumar et al., 2013; Leemans, Heylen, Quanten, & Deferme, 2011; Verma, Mohan, & Pandey, 2010; Wazaify et al., 2005; Zamir & Nadeem, 2016).

Studies show that patient's literacy assessment plays a key role in understanding and observance of the drug label (King et al., 2011). However, this study revealed that 84.4% of the university students, which are supposed to be educated adults, had never read instructions given with the medicine in their life time whereas just over 16.6% people reported to read instruction once in their lifetime, first time and every time they used the medicine. Our results are poor in contrast to everyday healthcare study where 96.0% people and over 80.0% participants in a study conducted in Ireland reported that they often read instructions provided with the OTC medicine (Wazaify et al., 2005). In Belgium one out of four people completely read the patient information leaflet prior to taking a new medicine (Leemans et al., 2011). Among American population one in six (16%) reads the label for dosage level, and one in ten reads the label for possible side effects upon buying OTC medicine for the first time (Interactive, 2002).

Globally, self-medication among adolescents is a widespread phenomenon and our result reveal that people's confidence over self-medication with paracetamol has increased with the passage of time. However there exists a major lack of concern in terms of its harmful effects and any

interactions with their concurrent medications. The aspects which frequently influenced the choice of this medicine were upon the recommendation of their family, friends and advertisement, revealing that 5.9% adults used paracetamol with doctor's consultation. Major reasons behind self-medication at student level includes, time saving, underestimation of the necessity to take professional advice for minor ailments, cost of physicians, anxiety related to hospital, increasingly high cost of modern medicines, previous successfulness with self-medication used for other medical conditions, low-cost and effortlessly purchased OTC medicines (Dengler & Roberts, 1996; Ghumman et al., 2013; Twycross et al., 2013). In our neighboring country India 83.9% adults follow the recommendations of friends and family, 12.2% follow advertisement but contradictory to us 21.9% follow the advice of Pharmacists (Kumar et al., 2013; Verma et al., 2010). The underlying reason for this contradiction is underutilization of community and clinical pharmacist in Pakistan who are solely dedicated towards the medicines and patient care (Azhar et al., 2009).

Compared to the similar studies conducted in different countries (between 2008 and 2011), a significant deficit of knowledge of API of paracetamol was observed in our population, with only 6.5% individuals actually knowing the API whereas 45% individuals in France (Boudjemai et al., 2013) and 31–45% people in USA have this knowledge (Shone, King, Doane, Wilson, & Wolf, 2011; Stumpf, Skyles, Alaniz, & Erickson, 2006). Furthermore, it was observed that only 2.5% people knew the maximum dose of paracetamol recommended in 24 h compared with 38–76.3% people (Chen, Schneider, & Wax, 2002; Hornsby et al., 2009; King et al., 2011; Stumpf et al., 2006; Wood et al., 2010) in USA, 53.8% in UK (Fosnocht, Taylor, & Caravati, 2008) and 78% in France (Boudjemai et al., 2013). Our results provides a solid evidence to the fact that accidental overdose of paracetamol from its analgesic use has amplified over the time (Twycross et al., 2013), as public lacked the necessary knowledge of its maximum dose and its synergistic effects with Acetaminophen.

Our results demonstrated an upsurge in knowledge related to the side effects of paracetamol. Here, 56.2% people were aware of its liver toxicity, as compared to the studies conducted in USA where 36–50% people were aware of its major side effects (Cham, Hall, Ernst, & Weiss, 2002; Chen et al., 2002; Hornsby, Przybylowicz, Andrus, & Starr, 2010; Wood et al., 2010). This could be due to the fact that people could relate most of the medicines to be effecting gastro-intestinal tract and opted for the closest answer related to it, but they were sure about their opinion with 57.7% people claiming that it can never cause death of a person irrespective of the dose consumed. This results shows a firm belief of people on OTC medicines in Pakistan and there seems a great level of contentment to their elected modality of self-management (Ghumman et al., 2013). Nevertheless these OTC medicines have increased potential for misuse, abuse (Wazaify et al., 2005) and this practice leads to further health vulnerabilities such as adverse drug reactions, prolonged illnesses and dependency upon the drugs (Verma et al., 2010). Moreover, only one fourth of the people knew correct potency of paracetamol which is 500 mg whereas others opted for low potency such as 10, 50 and 100 mg because of its availability on OTC basis and ease of accessibility. This results demonstrate a lack of realization of the importance of instructions given in the leaflet and or difficulties in understanding them.

An encouraging finding from the study is that majority of the subjects (75%) knew more than one use of paracetamol, stating that it is mostly used as analgesic and antipyretic whereas more than half of people (66.9%) reported that Angina was as the medical condition in which it cannot be used. It reveals that people are well aware of its uses and primary source of this information is either family, friends, advertisement and or previous prescriptions. But emphasis should made on the maximum dose which can be consumed to prevent any fatal consequences. It was also observed that (63.5%) respondents had the knowledge of brands as they that panadol and paracetamol are same. Our results confirms the findings of earlier study conducted on self-medication (Zamir & Nadeem, 2016), demonstrating that 91.8% adults take the medicine as OTC from the pharmacies.

Among the total population studied, 94.9% respondents admitted a lack of adequate information regarding these non-prescription medicines, hence proven by study instrument when they were scored on the knowledge scale with respect to the number of correct answers given by them, showing knowledge, which was poor in 70.8% (5 and below marks), satisfactory in 18.8% (6 marks), average in 8.0% (7 marks), good in 1.4% (8 marks) and excellent in 1.1% people (9 marks), as shown in Figure 4.

Despite certain limitations, this study serves as an eye opener for our country's health care professionals, regarding the use of paracetamol and potentially other OTC drugs. This study provides an estimate of misuse related harmful impact on the population. Paracetamol poisoning cases lie in the top list among drug induced poisoning cases in many countries (Fontana, 2008; Gyamlani & Parikh, 2002; Hawton et al., 2001; Schiødt et al., 1997), where knowledge related to paracetamol is much greater than our country (Dengler & Roberts, 1996; Hawton et al., 2001; Hornsby et al., 2009; King et al., 2011; Kumar et al., 2013; Leemans et al., 2011; Verma et al., 2010; Wazaify et al., 2005). Results of this study have identified gaps in knowledge regarding the appropriate use of paracetamol among the university students (educated people). It helps us estimate the knowledge among uneducated population, as Pakistan bears the burden of one of the most illiterate countries of Asia.

5. Conclusion

The implication of these results for the mostly uneducated population of Pakistan are critical, and serves as a wakeup call for the health care professional for a prompt action. Actions like, public education, better awareness and training for health professionals to ensure adequate information to patients regarding OTC use are need to be taken immediately. There must be national education campaigns by health care professionals and drug information centers to inform consumers on the safe use of OTC pain relief products, encouragement of the habits to read instruction given in the leaflet. Ease in accessibility and counselling sessions with health care professionals and record keeping to constrain the access to some OTC medicines. Physicians and Pharmacists must be aware of polypharmacy and interactions between prescribed and OTC medicine they might be taking by themselves. Cases of liver toxicity and deaths reported at hospitals due to paracetamol should be documented annually. Further studies related to this area shall be conducted.

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Competing Interest

The authors declare no competing interest.

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