

Over-The-Counter (OTC) Use/Misuse of Panadol by Undergraduate Students of Taif Medical College, KSA

Nighat Kafil¹, Nighat Murad², Farzana Rizwan Arain³, Nisreen Aref Al Bizrah⁴.

¹Department of Clinical Pharmacology, Taif Medical College, Taif University, KSA

²Department of Community Medicine, Taif Medical College, Taif University, KSA

³Obstetrics & Gynecology Department Taif Medical College, Taif University, KSA

Abstract

Introduction: The irrational use of OTC medicines is a challenge in both developed and developing countries. In Saudi Arabia, the misuse of a variety of analgesics is common among high school and university students. Amongst medical students Panadol (Acetaminophen) is the most commonly used analgesic and also one of the most frequently used drugs for self-prescription. In this study, the Knowledge, Attitudes & Practices (KAP) towards OTC use/misuse of Panadol in undergrad students of Taif medical college was explored.

Aim & methodology: To study the KAP of medical students in Taif city about the use/misuse of Panadol. KAP of 142 male and 139 female medical students from 2nd, 3rd and 4th year was assessed using a structured questionnaire about the use/misuse of Panadol.

Results: KAP scores were compared with age, gender, & academic year, using Mann-Whitney U and Kruskal Wallis H tests and a $p < 0.05$. There was a difference between mean KAP scores of male 19.7394, 5.32, 6.27 and female 18.0935, 4.93, & 5.94 respectively. Males showed higher mean scores in all the three domains. Chi square test also showed a statistically significant association between males and high levels of knowledge. Level of knowledge about Panadol use increased with the student's academic level and a significant association ($p < 0.05$) was observed between knowledge and age. The mean score of negative attitude was more than 40% and was due to the fact that the study participants did not consider the reading of the leaflet as important. >70% of participants had fair practices as regard to Panadol prescription, frequency of self-medication and practice of recommending the drug to others. KAP on Panadol use was treated as continuous variable and a positive correlation coefficient ($p = 0.006$) was computed between Knowledge & practices domain.

Conclusion: KAP in medical students need to be improved to ensure safety of Panadol use as OTC drug, for self-medication and also when prescribed to others. A collaborative effort with the pharmacy department and drug authorities could be launched to address the negative attitude and bad practices of the students.

Keywords: Over-the-counter, Panadol, analgesics.

I. Introduction

Self-medication (selection and use of medicines by individuals for treatment) is one of the major reasons for the irrational use of drugs. Globally, self-medication practices are more frequently observed for over the counter (OTC) medicines.^{1,2} Social and economic factors are important reasons that force an individual to take a medicine without an appropriate diagnosis and prescription. It is rare to see someone purchasing an OTC product with prescription.^{3,4} School/university students have been found to use different OTC substances to battle academic burden, examinations, and/or to improve their work concentration and alertness while studying. OTC and non-OTC analgesics, stimulants, antidepressants, and anti-histamines are all substances commonly abused by students in general. Although OTC oral analgesics show potential side effects, yet they are most popularly used by a majority of population including medical students.^{4,5}

The irrational use of medicines is a challenge in both developed and developing nations. In developed nations like the US, there are growing concerns about the use of OTC and non-OTC medicines by the students. Similarly, among the developing nations like Saudi Arabia, Taiwan and Pakistan, the misuse of a variety of painkillers, vitamins and sedatives has been reported among high school and university students.⁶ Panadol is the most commonly used analgesic and also one of the most frequently used drugs in self-prescribing practices among university students.^{3,4} Panadol is used as an analgesic and an anti-pyretic drug, besides being used in osteoarthritis, migraine and in a wide range of other illnesses.⁴

Keeping in mind the drug safety concerns in KSA and among the Saudi medical students, the current study aims to explore the use/misuse of Panadol (Acetaminophen) by medical students in Taif city. To our knowledge, no such study that examines the use/misuse of Panadol in Taif city, KSA has been conducted yet.

Methods:

Setting and participants: A cross-sectional study was conducted to assess the student’s pharmacological knowledge about Panadol,& their attitude & practices in using the drug. All male and female students of 2nd, 3rd and 4th year Taif medical college were asked to fill the questionnaire in front of the researcher.

Study tool and scoring strategy: A 10-item structured questionnaire was used for assessing KAP that consisted of two main sections

Section 1 (socio-demographic): This part comprised of questions regarding the age, sex, & academic level of the study respondents.

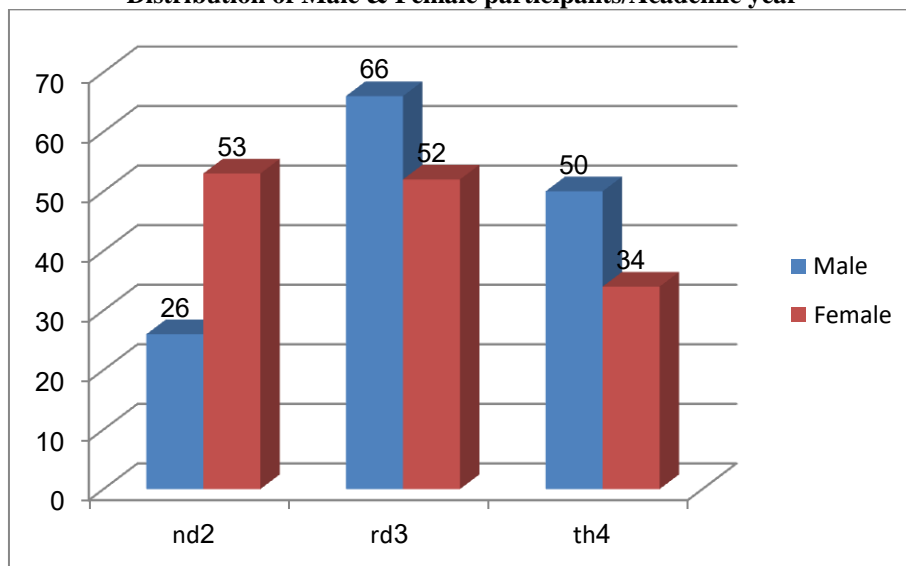
Section2 (Knowledge- K),(Attitude- A),(Practices- P): Over all pharmacological knowledge on Panadol use was assessed by 6 questions (K1–K6), each with 4, 6, 5, 4, 4 and 3, closed ended multiple choice options respectively. Attitude towards Panadol use was assessed on two (A1-A2) questions, each having 2 & 6 closed ended multiple choice options. The study participants were asked two (P1-P2) questions to assess their practices about the use of Panadol. Each practices question had five options. The most appropriate answer was given the highest score. The total scores for the whole Knowledge (KF), attitude (AF),& practices (PF) part varied from 0-26, 0-8, & 0-10 respectively. KF, AF, &PF were classified into three levels based on Bloom’s cut-off points of 60% & 80%. The cut-off points are as follows.

Knowledge		
High	>80%	(or score >20)
Moderate	60-80%	(or score 15-20)
Low	<60%	(or score < 15)
Attitude		
Positive	>80%	(07-08 scores)
Neutral	60-80%	(05-06 scores)
Negative	<60%	(00-04 score)
Practices		
Good	>80%	(or score >8)
Fair	60-80%	(or score 6-8)
Poor	<60%	(or score < 6)

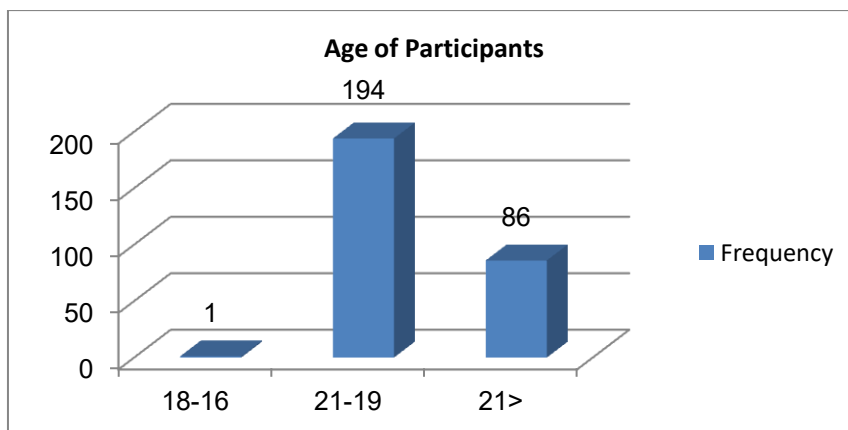
II. Results

The study was conducted at Taif Medical College, Taif University, KSA. The study respondents included male and female students of 2nd, 3rd and 4th year. Total number of 281 students (142 Male& 139 Female) from all 3 classes filled the questionnaire. Male/Female student ratio from79 students in2nd year was 26:53, in 118 students from 3rd year was 66:52, while in 84 students of 4th year the ratio was 50:34.

Distribution of Male & Female participants/Academic year



Sixty nine (69%) percent of study respondents were between 19 – 21 yrs of age while 31% students were more than 21 yrs of age.



Besides the demographic information the students filled 10 questions in the questionnaire answering queries about their information concerning Panadol. Distribution of knowledge on Panadol showed that only 88(31.3%) of the study respondents had “high knowledge” whereas 175(62.3%) had “moderate” & 18(6.4%) had “low” knowledge. The mean knowledge score for all the respondents was 18.9253, SD=3.1552& a range of 6-25.

Table 1: Distribution of knowledge on Panadol use

Level	Number	Percentage
High (score>20)	88	31.3%
Moderate(score 15-20)	175	62.3%
Low(or score<15)	18	6.4%
Minimum=6	Maximum= 25	Mean=18.9253
Total	281	100%

Regarding the dose of Panadol only 32(11.4%) chose the correct option of 2 tablets eight hourly, 109 (38.8%) students opted for 1 tablet tid, while 59 (21%) students opted for 2 tablets bd. More than 13% of students in 4th year, 11.4% in 2nd and 10.2% in 3rdyrchose the correct answer.203 (72.2%) of the students used Panadol for headache followed by 32 (11.4%) students, who used it for muscular pain. Use of Panadol was stratified by academic year. It was analyzed that 67 (84.8%) of 2nd year, 87 (73.7%) of 3rdyr and 49 (58.3%) students of 4thyr used it for headache. Knowledge about the dose of Panadol (500mg tabs) most likely to cause toxicity was also assessed. Total 32(11.4%) students said that 17-20 tablets of Panadol would result in toxicity whereas 74(26.3%) chose 13-16 tablets, while 94(33.5%) chose 9-12 tablets.62(22.1%) opted for 5-8 & 10 (3.6%) selected the option of 1-4 tablets of Panadol to cause toxicity. Panadol dose causing toxicity was stratified by academic year. Level of this information had increased from onlyaround24% to greater than 36%. Liver toxicity was chosen by 199 (70.8%) students, & kidney toxicity was identified by 42 (14.9%) students as the consequence of overuse of Panadol. Drug overuse was stratified by academic years& result showed an increasing trend when we compared 2nd to 4th yr. 59.5% students in 2ndyr, 74.6% in 3rdyr while 76.2% students from 4thyr chose liver toxicity as the correct answer.

Correct generic name i.e. Acetaminophen was chosen correctly by about 70% of the study respondents. Information about generic name significantly increased from only 59.5% of students in 2ndyrto 79.7% in 3rdyr and 92.9% in 4th yr. Panadol being both peripherally and centrally acting was correctly chosen by 153 (54.4%) students, 74 (26.3%) answered that it was centrally acting whereas 40 (14.2%) opted for Panadol to be peripherally acting only. This information was also checked for any change as the level of academic year increased and the result showed that 63.3% in 2ndyr, 59.3% in 3rd year, & only 39.3% in 4th year chose the correct answer.

Table 2: Frequency of responses on knowledge on Panadol use

Knowledge(K)	Score	Frequency	%age	Cum %
K1 What is the dose (500 mg tablet) of Panadol that you use?				
Did not answer	0	73	26.0%	26.0%
2 tablet 12 hourly (2 times/day)	1	59	21.0%	47.0%
1 tablet 8 hourly (3 times/day)	2	109	38.8%	85.8%
2 tablets 6 hourly (4 times/day)	3	8	2.8%	88.6%
2 tablets 8 hourly (3 times /day)	4	32	11.4%	100.0%
K2 You can use Panadol for				
Did not answer	0	5	1.8%	1.8%
To keep awake during examinations	1	5	1.8%	3.6%
Anxiety	2	6	2.1%	5.7%

Dysmenorrhea	3	22	7.8%	13.5%
Joints pain	4	8	2.8%	16.4%
Muscular pain	5	32	11.4%	27.8%
Headache	6	203	72.2%	100.0%
K3	How many tablets of Panadol (500mg/tablet) can cause toxicity?			
Did not answer	0	9	3.2%	3.2%
1 – 4 tabs	1	10	3.6%	6.8%
5 – 8	2	62	22.1%	28.8%
9 – 12	3	94	33.5%	62.3%
13 – 16	4	74	26.3%	88.6%
17 – 20	5	32	11.4%	100.0%
K4	What are the consequences of Panadol overuse?			
Did not answer	0	7	2.5%	2.5%
Photosensitivity	1	7	2.5%	5.0%
Stomach ulcers	2	26	9.3%	14.2%
Kidney toxicity	3	42	14.9%	29.2%
Liver toxicity	4	199	70.8%	100.0%
K5	The generic name of Panadol is?			
Did not answer	0	22	7.8%	7.8%
Mefenemic acid	1	2	0.7%	8.5%
Acetylsalicylic acid	2	18	6.4%	14.9%
Ibuprofen	3	20	7.1%	22.1%
Acetaminophen	4	219	77.9%	100.0%
K6	Where does Panadol act?			
Did not answer	0	14	5.0%	5.0%
Centrally only	1	40	14.2%	19.2%
Periphery only	2	152	54.1%	73.3%
Both centrally and peripherally	3	75	26.7%	100.0%

Attitude towards the use of Panadol:

Distribution of attitude towards Panadol showed that there were 67(23.8%) with positive, 99(35.2%) with neutral and 115(40.9%) with negative attitude. The mean attitude score for all the respondents was 5.1281, SD=1.53460 & range of attitude score was between 1 and 8.

Table 3: Distribution of attitude towards Panadol use

Level	Number	Percentage	
Positive (7-8 score)	67	23.8%	
Neutral (5-6 score)	99	35.2%	
Negative (1-4 score)	115	40.9%	
Minimum=1	Maximum= 8	Mean=5.1281	SD=1.5346
Total	281	100%	

Attitude was assessed on two attributes by asking students to give reasons why they prefer to use Panadol and whether they think that reading the leaflet (that comes with the drug) before prescribing the drug is helpful. 153(54.4%) of the participants thought that reading leaflet before prescribing drugs to anyone would be helpful, whereas 126 students (44.8%) did not consider it important. About 70% (69%) of the males & only 57% of females consider it important to read the leaflet of Panadol before using it. This attitude was checked for any change according to the increasing level of academic year. Positive attitude decreased from 59.5% in 2nd year to 57.6% in 3rd year and 45.2% in 4th year. Second attribute on attitude that was assessed was the reason students prefer for prescribing Panadol. A total of 69 (24.6%) students answered correctly that they would prefer Panadol because they think it is safer than other NSAIDs. 111 (39.5%) students reported that they would use the drug because it is easily available. Attitude towards Panadol being safer than other NSAIDs improved to around 30% in 4thyr students from 24% and 21% in 2nd and 3rdyr respectively.

Table 4: Frequency of responses on Attitude towards Panadol use

Attitude (A)	Score	Frequency	% age	Cum %age
A1	Do you think reading the leaflet before using the drug would be helpful?			
Did not answer	0	2	0.7%	0.7%
No	1	153	54.4%	55.2%
Yes	2	126	44.8%	100.0%
A2	Panadol is used because it is:			
Did not answer	0	5	1.8%	1.8%
Well-advertised	1	4	1.4%	3.2%

Cheap	2	45	16.0%	19.2%
Easily available	3	111	39.5%	58.7%
Used by friends/family members	4	9	3.2%	61.9%
Efficacious	5	69	24.6%	86.5%
Safe	6	38	13.5%	100.0%

Practices regarding Panadol use:

Majority (73.3%) of the study respondents had fair practices, 0.7% was observing good while 26% had poor practices regarding the use of Panadol. The mean practices score for all the respondents was 6.1068 out of the possible 10 points (SD=1.3820).The range of practices score was between 0 and 10.

Table 5: Distribution of practices regarding Panadol use

Level	Number	Percentage		
Good(9-10 score)	2	0.7%		
Fair (6-8 score)	206	73.3%		
Poor (<6 score)	73	26%		
Minimum=0	Maximum=10	Mean=6.1068	SD=1.38	20
Total	281	100%		

Regarding student’s practices on frequency of use of Panadol, the results revealed that 224 (79.7%) students reported that they used Panadol as and when required whereas 5 (8.5%) were at least using it once a month. Practices on the frequency of use of Panadol when stratified by academic year improved tremendously from 74.7% in 2ndyr to 78.8% in 3rdyr and 85.7% in 4th yr. Student’s practice on prescribing Panadol showed that 173 (61.6%) students recommended the drug to their family and friends. 56(19.9%) students have prescribed Panadol to their friends whereas 9(3.2%) have suggested it to children. It was also seen that more than 75% of students from 2nd – 4th year suggested the use of Panadol to their family members and friends.

Table 6: Frequency of responses on practices on Panadol use

Practices (P)	Score	Frequency	% age	Cum % age
P1 How often do you use Panadol				
Did not answer	0	5	1.8%	1.8%
Every day	1	5	1.8%	3.6%
Once a week	2	12	4.3%	7.8%
At the time of examination only	3	11	3.9%	11.7%
Once a month	4	24	8.5%	20.3%
As and when required	5	224	79.7%	100.0%
P2 Have you ever recommended Panadol to				
Did not answer	0	41	14.6%	14.6%
Friends	1	56	19.9%	34.5%
Family members (adults)	2	173	61.6%	96.1%
Children	3	9	3.2%	99.3%
All of the above	4	1	0.4%	99.6%
None of the above	5	1	0.4%	100.0%

Comparison of KAP between the group variables

To compare scores of knowledge, attitude and practices with various demographic factors (age, gender, & academic year) Inferential statistics, i.e., Mann-Whitney U and Kruskal Wallis H tests and a $p < 0.05$ as statistically significant were applied .There was a difference between mean knowledge, attitudes and practices scores of males 19.7394, 5.32, 6.27 and females 18.0935,4.93,& 5.94 respectively. Males showed higher mean scores in all the three domains as compared to females. The three domains i.e. knowledge, attitude and practices on Panadol use were also treated as continuous variable and correlation coefficient was computed. Knowledge on Panadol use showed a positive correlation with practices (p=0.006).Chi square test was also used to estimate the degree of relationship between three categories of knowledge (low, moderate, & poor) attitude (negative, neutral , & positive) and practices (poor, fair, & good).Table 7, 8,& 9 show the results of these tests

Table 7: Mean scores with respect to the demographics

Variable	Knowledge. score 18.93+3.15 Mean rank P.value		Attitude. score 5.13+1.535 Mean rankP.value		Practice. score 6.11+1.382 Mean rank P.value	
Age 1=16-18,2=19-21,3=>21						
1	22	0.93	6	0.87	7.00	0.56
2	18.67		5.07		6.02	
3	19.47		5.24		6.21	
Acadyr						
2	18.61	0.10	5.01	0.69	6.08	0.8
3	18.70		5.14		6.08	
4	19.54		5.21		6.18	
Gender 1=M,2=F						
1	19.74	0.00*	5.32	0.03*	6.27	0.03*
2	18.09		4.93		5.94	
<i>P value < 0.05 is statistically significant</i>						

Table 8: Categorization of study participants with respect to KAP domain

Variable	Knowledge			Attitude			Practices		
	Low	Moderate	High	Negative	Neutr al	Positive	Poor	Fair	Good
Age 1=16-18,2=19-21,3=>21									
1	0	0	1	0	1	0	0	1	0
2	12	131	51	82	67	45	54	139	1
3	6	44	36	33	31	22	17	66	1
	X²=9.4346	df=4	P=0.05*	X²=2.246	df=4	P=0.69	X²=2.438	df=4	P=0.65
Acadyr									
2	6	52	21	32	32	15	22	56	0
3	6	80	32	53	34	31	32	85	1
4	6	43	35	30	33	21	17	65	1
	X²=7.0645	df=4	P=0.132	X²=4.535	df=4	P=0.338	X²=2.351	df=4	P=0.67
Gender 1=M,2=F									
1	7	72	63	54	48	40	32	109	1
2	11	103	25	61	51	27	39	97	1
	X²=22.76	df=2	P=0.00*	X²=3.007	df=2	P=0.22	X²=1.300	df=2	P=0.52

P < 0.05 was set as statistically significant

Table 9 : Correlation between knowledge, Attitude and Practices regarding panadol I

Spearman's rho	Kf	Kf			Af			pf		
		Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N	Correlation Coefficient	Sig. (2-tailed)	N
		1.000	.	281	.043	.468	.164**	.039	.515	281
					1.000	.	.039	.515	.	281
							1.000	.	.	281

** . Correlation is significant at the 0.01 level (2-tailed).

III. Discussion

Being medical students, it is commonly assumed that they will have more information about a drug like Panadol that is used very frequently. The researchers wanted to see if students considered it as an OTC product and how they dealt with it. This study interviewed both male and female medical students in their 2nd, 3rd, & 4th academic years from Taif University to assess their knowledge, attitude and practices towards Panadol use. It was understood that students of 2nd year may lack some basic information but as their academic level increases their information about the drug would increase reciprocally. In our study we were able to show an increase in the level of knowledge about the drug with increase in the academic level and a significant association was also observed with age of the participants which is in concordance with study conducted by Golar (2011) and Kontogiorgis (2016)^{7,8}. This could be due to the fact that as the academic level of the students increase along with their being exposed to practical courses, this may lead to an improvement in their knowledge and understanding of drugs and diseases helping them to make the right selection of drugs for minor ailments at least. Due to this reason students seem to rely on their own knowledge and use some common medications on themselves instead of consulting the physicians. However, highest scores of knowledge could

not exceed 30% in our study participants which shows that although the drug is frequently used but its knowledge needs to be reinforced throughout their educational years.

It was seen that male medical students had better knowledge on the use of Panadol as compared to females which is in accordance with the results obtained by Jang & Cerulli in 2011.⁹ We assume that this could be because male and female medical colleges in Taif are completely segregated with different faculty members teaching each one. The male medical college could be reinforcing its student's knowledge by some other means not practiced in the female section.

The negativity in attitude of students that was observed in our study participants was due to the fact that our students did not consider it important to read the leaflet on Panadol use whereas, reading the leaflet is considered a key source of information that reduces the risk of misuse of medication as seen in the study conducted by Ramahi and Zaid in 2012.¹⁰ The situation is more worrisome as more than 75% of our study respondents considered the drug to be cheap, efficacious and safe, hence, a common prescribing practice by them. The students should not only be sensitized about the importance of the information in the leaflet (developed after years of research) but also the benefits of reading it or the hazardous effects of not reading the information¹¹. Common barriers like extensive amount of inexplicable text, small font size, quality of the information, the medical jargon and not using the local language have been reported to be some of the reasons that results in healthcare professionals and consumers to refrain from reading the leaflets about drugs.¹²⁻¹⁵ By addressing some of the common barriers a positive attitude and ultimately better practices in health care professionals could be observed.^{8,11,16}

Another significant finding in our research was the positive correlation between overall knowledge of the study participants and their practices on Panadol use. Frequency and recommendations for Panadol use by majority of the participants was quite good. It was seen that good practices were followed as most of the participants (97%) refrained from prescribing the drug to children. Our study respondents have high knowledge of adverse effects namely liver disease caused by Panadol that is in concordance with other studies (Almalak 2013, Saab 2016). However, in view of the frequent use of the drug for common ailments and easy OTC availability and a possible adverse effect including hepatic and renal failure it is important that interventions be developed to create awareness among students about the possible dangerous consequences.

IV. Conclusion

Taif medical college has vertical integration following a modular system of education. NSAIDs including Panadol are mainly taught in 2nd yr while there is no reinforcement of the topic in forthcoming years. Although the knowledge attitude and practices have improved in subsequent years but they are still not categorized as good according to our study. Some curriculum changes to introduction of the concept and principles of OTC use be reflected. Also the college should allocate resources to raise awareness of students on the benefits and hazards of self medication

A collaborative effort can be launched with the drug authorities and the department of pharmacy where on one hand the quality of the leaflet could be improved and on the other hand the negative attitude and bad practices of the students could be addressed.

Limitations

The main limitations of this study were that only 10 closed-ended questions were used to conduct the survey. The first language of our study participants is Arabic while the questionnaire was in English. A high proportion of non-responders could not be followed because of the difficulty for the researcher in approaching the male section of the medical college.

References

- [1]. Levy DM, Imundo LF. Nonsteroidal Anti-inflammatory drugs: A survey of practices and concerns of pediatric medical and surgical specialists and a summary of available safety data. *Pediatr Rheumatol Online J* 2010;8.
- [2]. Jain A, Bhaskar DJ, Gupta D *et al.* Drug prescription awareness among the 3rd year and final year dental students: A cross-sectional survey. *J Indian Ass Public Health Dentistry* 2015;13:73-78.
- [3]. Samarawickrama AAHS, Suraweera RK, Sivayagathan C *et al.* A study on Paracetamol consumption by undergraduate students in the faculty of allied health sciences, University of Peradeniya. *Int J Sci Research Pub* 2014;4:1-6.
- [4]. Saab S, Konyon PG, Viramontes MR *et al.* Limited knowledge of Acetaminophen in patients with liver disease. *J Clin Transl Hepatol* 2016;4:281-287.
- [5]. Chen J, Murtaza G, Nadeem N *et al.* 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. *Acta Poloniae Pharmaceutica-Drug Research* 2014;71:337-342.
- [6]. Almalak H, Albluwi AI, Alkheib DA *et al.* Student's attitude toward use of over the counter medicines during exams in Saudi Arabia. *Saudi Pharma J* 2014;22:107-112.
- [7]. Golar SK. Use and understanding of analgesics (painkillers) by Aston university students. *biosci horizons* 2011;4:71-78.
- [8]. Gutema GB, Gadisa DA, Kidanemariam ZA *et al.* Self-Medication Practices among Health Sciences Students: The Case of Mekelle University. *J Applied Pharmaceutical Sci* 2011;1:183-189.

- [9]. Jang SM, Cerulli J, Grabe DW, *et al.* NSAID-Avoidance Education in Community Pharmacies for Patients at High Risk for Acute Kidney Injury, Upstate New York, 2011. *Preventing Chronic Disease.* 2014;11:E220. doi:10.5888/pcd11.140298.
- [10]. Al-Ramahi R, Zaid AN, Kettana N *et al.* Attitudes of consumers and healthcare professionals towards the patient package inserts - a study in Palestine. *Pharmacy Practice.* 2012;10(1):57-63.
- [11]. Gurney S, Simmonds J. Osteoporosis: a teenage perspective. *Physiotherapy* 2007; 93(4): 267–272.
DOI: 10.1016/j.physio.2006.12.004
- [12]. Watson KT, Barash PG. The new Food and Drug Administration drug package insert: implications for patient safety and clinical care. *Anesth Analg.* 2009;108:211–218.
- [13]. Idris KAMA, Yousif MA, Elkhawad AO. Development of a useful medication package insert for patients: Sudan intervention study. *Intgr J Br.* 2014;1:38-46. e.http://yloop.in/index.php/IJB/article/view/113/113
- [14]. Bernardini C, Ambrogi V, Perioli *Let al.* Comprehensibility of the package leaflets of all medicinal products for human use: a questionnaire survey about the use of symbols and pictograms. *Pharmacol Res.*2000;41:679–688.
- [15]. Bernardini C, Ambrogi V, Fardella G *et al.* How to improve the readability of the patient package leaflet: a survey on the use of colour, print size and layout. *Pharmacol Res.* 2001;43:437–444. [PubMed]
- [16]. Kontogiorgis C, Nena E, Berberoglou E, *et al.* Estimating Consumers' Knowledge and Attitudes Towards Over-The-Counter Analgesic Medication in Greece in the Years of Financial Crisis: The Case of Paracetamol. *Pain Ther.* 2016;5: 19–28.
- [17]. Fuchs J, Hippus M. Inappropriate dosage instructions in package inserts. *Patient Educ Couns.* 2007;67:157–168.