Research Article

Pattern of Self-medication with Analgesics among Minia University students, Minia, Egypt

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Abstract
Introduction: Self-medication with analgesics is usually defined as intake of any analgesics for treating oneself without professional supervision to relieve an illness or a condition. Self-medication with analgesics is an issue with serious global implications. This study it was aimed to determine pattern of self-medication with analgesics use among Minia University students, Minia, Egypt. **Aim of study:** to determine the prevalence of self-medication with analgesics among Minia University students and to identify the most common analgesics used and the causes of taking them. **Methods:** A cross-sectional study was conducted on a sample of randomly selected students from Minia University. Data was collected using self-administered questionnaire. Verbal consent was ensured before applying the questionnaire. The Chi square was performed using SPSS 20 to identify associations and differences. **Results:** The sample consisted of 758 students 64.5% females and 35.5% male students. Prevalence of self-medication with analgesics was 95.9%. Out of which 71.5% took paracetamol and 1.3% took tramadol without physician prescription. The most common cause of taking analgesic is headache followed by menstrual pain (48.7%) in female students and tooth, ear and throat pain (29.4%) in male students. **Conclusion:** Self-medication with analgesics by students is an important issue to be avoided. There is a need to raise the orientation and a health education to the curriculum of undergraduate students also raise the community awareness about these hazards 5and drawbacks.
Key words: Self-medication with analgesics - University students

Introduction
According to world health organization (WHO) in 2015 the concept of self-medication involves the utilization of medicinal products by the individuals to take care of self-recognized disorders or symptoms or continuous use of a medication prescribed by a physician for chronic or recurring diseases or symptoms (Goyal et al., 2018). The public health importance of self-medication increased when switching of some medications to non-prescription status to be sold without any prescription in order to reduce the burden on health care professionals. The availability of medicines with analgesic effects varies extensively between countries (Sarganas et al., 2015).

Over the counter (OTC) analgesic use significantly increased from 10 to 12 % within a decade. There are contextual trends that may explain this rise, as more analgesics move from prescription to OTC status, possibly leading to an increase of OTC analgesic use. Availability, convenience, costs and product marketing are likely to impact on OTC analgesics use and self-medication in general (Sarganas et al., 2015).

There is high prevalence of self-medication with analgesics among university student, Based on previous studies done in Bangladesh, south India and Belgrade self-medication prevalence was high among medical students as it was 88.0%, 87.3%, 79.9% respectively in which analgesics prevalence was 49.2%, 72.5%, 55.4% respectively (Seam et al., 2018; Naik et al., 2019 and Lukovic et al., 2014).

In Egypt, as in many Middle East countries, medications can easily be obtained OTC and this is represented a serious public health problem in these countries. The prevalence of medication abuse was progressively increased in Egypt during the last two decades. The prevalence of medication abuse was increased

to be as high as 86.4 % the most commonly used drugs were analgesics 96.7% (Kasim and Hassan, 2018). Self-medication is a relatively frequent problem in Minia as a community-based cross-sectional study was conducted among 422 randomly selected adults in Minia, Egypt found that 73% practice self-medication (Ghazawy et al., 2017).

Aim of study:

To determine the prevalence of self-medication with analgesics among Minia University students and to identify the common used analgesics and the causes of taking them.

Methods

Study population: This study was conducted among 364 students of fourth year from faculty of Medicine and 394 students of fourth year from faculty of Specific Education. Totally 758 undergraduate students were included in the study, Minia University, Minia, Egypt during the period from December 2018 to May 2019.

Study tool: A self-administered structured Arabic questionnaire was used to collect data about two main items, First part included students' demographic data; Second part included Practice questions.

Study type: Cross sectional survey study.

Sample size and sampling: Using the stratified random sampling technique, the faculties of the university were divided and listed into two groups, medical and non-medical faculties. Faculty of Medicine and faculty of Specific Education were randomly chosen to represent the medical and non-medical faculties respectively from 18 faculties in Minia University by simple random technique. Fourth year students were randomly chosen by simple random technique. A total coverage random sample included fourth year students of faculty of Medicine and fourth year students of faculty of Specific Education who were available at their classrooms during data collection and agreed to participate in the study and fill out self-administered questionnaire.

Data collection and analysis: the semi-structured questionnaire was prepared. Data was collected over two month. Using self-administered questionnaire enquiring about personal data as (Age, sex, residence, faculty, educational year, living state, marital status and modified socioeconomic scale) and general question about practice of self-medication with analgesics. Data were analyzed using SPSS version 20 results were presented using absolute figures and percentages. Quantitative data were presented by mean, standard deviation while qualitative data were presented by frequency distribution. The Chi- square test was used to compare between proportions. Student t-test was used to compare two means.

Ethical consideration: The study protocol was approved by the research ethical committee of faculty of Medicine in Minia University. Approval of the faculties' deans was obtained. Data were collected from participants after explaining the nature of the study and taking a verbal consent from each of them. Confidentiality, privacy and freedom to withdraw from the study on the participant's decision were assured

Results

Table (1): Socio-demographic characteristics of the studied college students according to the educational year and the faculty, Minia University, 2019.

Socio-demographic characteristics	Faculty		Total	Significance	
	4th year, medical	4th year, specific education			
	No (%)	No (%)	No (%)	$\chi 2$	p-value
*Age: (mean±SD)	21.62± 0.73	21.88± 0.77	21.75± 0.76	4.736	<0.0001
Sex:					
Male	155(42.6%)	114(28.9%)	269(35.5%)	15.40	<0.0001
Female	209(57.4%)	280(71.1%)	489(64.5%)		
Residence:					
Urban	210(57.7%)	195(49.5%)	405(53.4%)	5.11	0.024
Rural	154(42.3%)	199(50.5%)	353(46.6%)		
Live alone:					
Yes	16(4.4%)	26(6.6%)	42(5.5%)	1.76	0.185
No	348(95.6%)	368(93.4%)	716(94.5%)		
Marital status:					
Single	363(99.7%)	370(93.9%)	733(96.7%)	20.07	<0.0001
Married	1(0.3%)	24(6.1%)	25(3.3%)		
socioeconomic standard:				86.67	<0.0001
Low	19(5.2%)	58(14.7%)	77(10.2%)		
Middle	146(40.1%)	247(62.7%)	393(51.8%)		
High	199(54.7%)	89(22.6%)	288(38.0%)		
Total	364(100%)	394(100%)	758(100%)		
*independent samples t test					

Table (2): Most common analgesics used among college students according to the educational year and the faculty, Minia University, 2019.

Analgesics	Faculty		Total	Significance	
	4th year, medical	4th year, specific education		$\chi 2$	p-value
	No (%)	No (%)	No (%)		
Salicylates acid derivative: Aspirin				34.81	<0.0001
Yes	33(9.1%)	100(25.4%)	133(17.5%)		
No	331(90.9%)	294(74.6%)	625(82.5%)		
Propionic acid derivative: 1.Ibuprofen				01.48	0.224
Yes	107(29.4%)	132(33.5%)	239(31.5%)		
No	257(70.6%)	262(66.5%)	519(68.5%)		
2. Naproxen				02.43	0.119
Yes	2(0.5%)	7(1.8%)	9(1.2%)		
No	362(99.5%)	387(98.2%)	749(98.8%)		
3.Ketoprofen				45.77	<0.0001
Yes	82(22.5%)	181(45.9%)	263(34.7%)		
No	282(77.5%)	213(54.1%)	495(65.3%)		
Acetic acid derivative: 1.Ketorolac				00.04	0.851
Yes	21(5.8%)	24(6.1%)	45(5.9%)		
No	343(94.2%)	370(93.9%)	712(94.1%)		
2.Indomethacin				00.01	0.955
Yes	1(0.3%)	1(0.3%)	2(0.3%)		
No	363(99.7%)	393(99.7%)	756(99.7%)		
Preferential COX-2 inhibitors: 1.Diclofenac				35.13	<0.0001
Yes	101(27.7%)	192(48.7%)	293(38.7%)		
No	263(72.3%)	202(51.3%)	465(61.3%)		
2.Meloxicam				08.24	
Yes	6(1.6%)	22(5.6%)	28(3.7%)		
No	358(98.4%)	372(94.4%)	730(96.3%)		
Selective COX-2 inhibitors: Celecoxib				00.15	0.696
Yes	6(1.6%)	8(2.0%)	14(1.8%)		
No	358(98.4%)	389(98.0%)	744(98.2%)		
Paraaminophenol derivative: Paracetamol				02.98	0.084
Yes	271(74.5%)	271(68.8%)	542(71.5%)		
No	93(25.5%)	123(31.2%)	216(28.5%)		
Tramadol				01.32	0.251
Yes	3(0.8%)	7(1.8%)	10(1.3%)		
No	361(99.2%)	387(98.2%)	748(98.7%)		
Total	364(100%)	394(100%)	758(100%)		

Table (3): Most common cause of using analgesics among male college students according to the educational year and the faculty, Minia University, 2019.

cause of taking analgesics among male	Faculty		Total	Significance	
	4th year,medical	4th year, specific education	No (%)	χ2	p- value
	No (%)	No (%)			
Headache				00.45	0.480
Yes	121(78.1%)	93(81.6%)	214(79.6%)		
No	34(21.9%)	21(18.4%)	55(20.4%)		
Tooth,Ear, and Throat pain				00.91	0.340
Yes	42(27.1%)	37(32.5%)	79(29.4%)		
No	113(72.9%)	77(67.5%)	190(70.6)		
Muscular,Joint and Back pain				03.40	0.065
Yes	23(14.8%)	27(23.7%)	50(18.6%)		
No	132(85.2%)	87(76.3%)	219(81.4%)		
Abdominal and Chest pain				04.37	0.037
Yes	9(5.8%)	15(13.2%)	24(8.9%)		
No	14(94.2%)	99(86.8%)	245(91.1%)		
Stress,Loss concentration				00.01	0.909
Yes	9(5.8%)	7(6.1%)	16(5.9%)		
No	146(94.2%)	107(93.9)	253(94.1%)		
Cold and flu	5(3.3%)	0(0.0%)	5(1.9%)	09.02	0.172
Fever	3(1.9%)	1(0.9%)	4(1.5%)		
Operation	0(0.0%)	1(0.9%)	1(0.4%)		
Lymphadenitis	1(0.6%)	0(0.0%)	1(0.4%)		
Epilepsy	0(0.0%)	1(0.9%)	1(0.4%)		
Addiction	0(0.0%)	1(0.9%)	1(0.4%)		
Nothing	146(94.2%)	110(96.4%)	256(95.2%)		
Total	155(100%)	114(100%)	269(100%)		

Table (4): Most common cause of using analgesics among female college students according to the educational year and the faculty, Minia University, 2019.

cause of taking analgesics among female	Faculty		Total	Significance	
	4th year, medical	4th year,specific education	No (%)	χ2	p- value
	No (%)	No (%)			
Headache				0.031	0.861
Yes	132(63.2%)	179(63.9%)	311(63.6%)		
No	77(36.8%)	101(36.1%)	178(36.4%)		
Tooth, Ear and Throat pain				4.776	0.029
Yes	41(19.6%)	79(28.2%)	120(24.5%)		
No	168(80.4%)	201(71.8%)	369(75.5%)		
Muscular, Joint and Back pain				0.162	0.687
Yes	13(6.2%)	20(7.1%)	33(6.7%)		
No	196(93.8%)	260(92.9%)	456(93.3%)		
Abdominal and Chest pain				4.629	0.031
Yes	11(5.3%)	30(10.7%)	41(8.4%)		
No	198(94.7%)	250(89.3%)	448(91.6%)		
Menstrual pain				1.772	0.183
Yes	109(52.2%)	129(46.1%)	238(48.7%)		
No	100(47.8%)	151(53.9%)	251(51.3%)		
Stress, Loss concentration				0.332	0.565
Yes	3(1.4%)	6(2.1%)	9(1.8%)		
N	206(98.6%)	274(97.9%)	480(98.2%)		
Cold and flu	4(1.9%)	0(0.0%)	4(0.8%)	9.696	0.084
Fever	0(0.0%)	2(0.7%)	2(0.4%)		
Operation	0(0.0%)	1(0.4%)	1(0.2%)		
Sinusitis	0(0.0%)	1(0.4%)	1(0.2%)		
Pluritis	1(0.5%)	0(0.0%)	1(0.2%)		
Nothing	204(97.6%)	276(98.5%)	480(98.2%)		
Total	209(100%)	280(100%)	498(100%)		

Discussion

The total number of students included in this study was 758 students; (48%) were from fourth year Medicine faculty and (52%) students from faculty of specific education. The mean age of students was 21.75±0.76 years, about (64.5%) of students were females, (53.5%) were from urban residence, and (51.8%) were middle socioeconomic standard (Table 1).

In the present study the prevalence of self-medication with analgesics was (95.9%) as the total number of students who use analgesics regularly is 727. A higher rate were reported among university students from Raiwind Road, and Lahore in Pakistan as the prevalence was (98%) (Tahir et al., 2011). On the other hand, a lower rate was reported among medical students

at Ain Shams university as (87.3%) of students took analgesics (El-Ezz and Ez-Elarab, 2011), (55.4%) of senior medical students and interns in King Abdulaziz university, Jeddah, Saudi Arabia (Ibrahim and Alamoudi, 2018) and the same percentage in medical students in Belgrade, Serbia (Lukovic etal., 2014).

In current study it was found that the most commonly used analgesics in Minia university students was paracetamol as (71.5%) of college student use it (Table 2). This was agreed with results from previous study on medical students at Ain Shams University, Egypt (El-Ezz and Ez-Elarab, 2011). Similar results were found in some previous studies among university students in Surat, Jazan, Ethiopia and Pakistan which showed that paracetamol was the most common analgesics used by students (Malam et al., 2015; Madkhali A et al., 2017; Beyene et al., 2017 and Tahir et al., 2011). Students prefer paracetamol than other analgesics and this is because most of the commercial brands of analgesics contain paracetamol. Also, it has favorable side effect profile and used as a first line analgesics for day-to-day pain. The lower results of other analgesics may be due to the fact that these drugs are obtained on prescription.

This study found that the prevalence of tramadol usage among Minia university students is (1.3%) without significant difference among different colleges (Table 2). In contrast to the previous studies the prevalence of tramadol was (1.8%) among university students in Sohag, Egypt (Meray et al., 2016). A higher rate were reported among of undergraduate students, from 10 colleges in Zagazig University as (12.3%) used tramadol at least once during their lives (Bassiony et al., 2018) and (12%) among Mansoura University students (Mahgouba et al., 2016).

Tramadol usage was more prevalent than other opioid analgesics and this may be due to more accessible and cheaper than other opioid analgesics, it is available without prescription until recent time makes it easy to obtain, also because of the false concept about tramadol as they consider it as a treatment for depression, premature ejaculation and to increase sexual orgasm and as it lowers depressive criteria in relation to stresses, such as headaches and relieve back aches so that cause euphoria, to increase the productivity.

According to the current study we found the most common cause of taking analgesics among male college students is headache (79.6%) without significant difference among different colleges (Table3). In case of female college students the most common cause of using analgesics is headache (63.6%) without significant difference among different colleges followed by menstrual pain (48.7%) also without significant difference among different colleges (Table 4). This was in accordance with the result of previous studies among university student in Pakistan, Surat, Bahrain, Iran, Nepal, India as headache in general and dysmenorrhea in female students are the main indications of using analgesics (Tahir et al., 2011; Malam et al., 2015; Li et al., 2014; James et al., 2006; Sarahroodi et al., 2012; Yadav et al., 2016 and Kumar and Vandana, 2016).

Conclusions and recommendations:

Self-medication with analgesics is practiced by undergraduate medical and non-medical students. Raising the issue of more orientation and health education to non-medical students and stressing upon all related topics in the medical student curriculum is required to build up new generations combating unregulated self-medication with analgesics.

References

1. Beyene A, Getachew E, Doboch A, Poulos E, Abdurahman K and Alebachew M (2017): Knowledge, attitude and practice of self-medication among pharmacy students of Rift Valley University, Abichu Campus, Addis Ababa, Ethiopia. Journal of Health and Medical Informatics; 8(3):269-275.
2. El-Ezz NFA and Ez-Elarab HS (2011): Knowledge, attitude and practice of medical students towards self-medication at Ain Shams University, Egypt. Journal of preventive medicine and hygiene; 52(4):196-200.
3. Ghazawy ER, Hassan EE, Mohamed ES and Emam SA (2017): Self-Medication among adults in Minia, Egypt: A Cross Sectional Community-Based Study. Health; 9(6):883-895.
4. Goyal A, Gaur A, Singh M, Ranjan R and Deepak K (2018): knowledge, attitude and

practice of over the counter (OTC) medicine among urban population – across sectional study. Indian Research Journal of Pharmacy and Science; 5(1):1302-1309.
5. Ibrahim NK and Alamoudi BM (2018): Self-Medication with Analgesics: Knowledge and Attitudes of Senior Medical Students and Interns at King Abdulaziz University. Journal of Pharmaceutical Research International; 21(1):1-9.
6. James H, Handu SS, Al Khaja KA, Otoom S and Sequeira RP (2006): Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. Medical Principle Practice; 15(4):270-275.
7. Kasim K and Hassan H (2018): Self Medication problem in Egypt: A Review of Current and Future Perspective. International Journal of Current Research and Review; 10(4):40-44.
8. Kumar A and Vandana ANA (2016): Analgesics self-medication and its association with sleep quality among medical undergraduate. Journal of clinical and diagnostic research: JCDR, 10(12):FC07-FC11.
9. Li T, Murtaza G, Azhar S, Nasir B, Raza H, Shah SH, Farzana K, Khan AK, Mir S, Li Y, and Nisa ZU (2014): Assessment of the Determinant of Choice of 'Over the Counter' Analgesics among Students of a University in Abbottabad. Pakistan. Tropical Journal of Pharmaceutical Research; 13(10):1713-1717.
10. Lukovic JA, Miletic V, Pekmezovic T, Trajkovic G, Ratkovic N, Aleksic D and Grgurevic A (2014): Self-medication Practices and Risk Factors for Self-medication among Medical Students in Belgrade, Serbia. PLoS ONE; 9(12): e114644
11. Madkhali A, Alhazmi W, Alkhaldy A, Moafa T, Alqahtani E, and Almuhib M (2017): Knowledge, Attitude and Practices about Use of Over the Counter Oral Analgesics among Female Students in Jazan University. International Journal of Healthcare Sciences; 4(2):941-947.
12. Mahgouba RM, El-Hadidyb MA, Abo El Hodab MF and Atrouny MH (2016): A study of opioid dependence among Mansoura University students. Egyptian Journal of Psychiatry; 37(3):174-181.
13. Malam PP, Zala AC, Kantharia ND, Patel D, and Patel D (2015): Pattern of self-medication of analgesic among under-graduate medical students of government medical college, Surat: a cross-sectional questionnaire-based study. Int J Int Med Res; 2(3):53-56.
14. Meray MS, Ahmed FH and Rania AR (2016): Study of Drug Abuse among University Students in Sohag, Egypt. Journal of Forensic, Toxicology and Medicolegal Analysis; 1(2):19-23.
15. Naik R, Naik GS and Jharapala P (2019): Prevelance, behavior, awereness and attitude regarding self-medication: Acomp-arative study between medical and dental students in South India. Global Journal for Research Analysis; 8(4):2277–8160.
16. Sarahroodi S, Maleki-Jamshid A, Sawalha AF, Mikaili P and Safaeian L (2012): Pattern of self-medication with analgesics among Iranian University students in central Iran. Journal Family and Comm-unity Medicine; 19(2):125-129.
17. Sarganas G, Buttery AK, Zhuang W, Wolf IK, Grams D, Rosario ASR, Scheidt-Nave C and Knopf H (2015): Prevalence, trends, patterns and associations of analgesic use in Germany. BMC Pharmacology and Toxicology; 16:28-35. Seam OR, Bhatta R, Saha BL, Das A, Hossain M, Uddin N, Karmakar P, Choudhuri SK and Sattar MM (2018): Assessing the Perceptions and Practice of Self-Medication among Bangladeshi Undergraduate Pharmacy Students. Pharmacy; 6(6):1-12.
18. Tahir MU, Shoai N, Usman A, Sadiq S and Harris NIK (2011): prevalence of analgesic use amongst university students. Pakistan Journal of Medical and Health Sciences; 5(4):775-777.
19. Yadav AK, Rai BK, Budhathoki SS, Ghimire A, Shrestha SR and MallaGB (2016): Self-prescription of Paracetamol by Undergraduate Students in BP Koirala Institution of Health Sciences. journal of the Nepal Medical Association; 55(203):11-15