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RESEARCH ARTICLE

Knowledge and Practices regarding the use of Non-steroidal Anti-inflammatory Drugs among University students in Jordan

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Abstract:

Background:

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) in pain management is common and not usually controlled. NSAIDs are a widely used therapeutic group worldwide, particularly in the Arab world. Inappropriate self-medication can have several potential risks.

Objectives:

This study aimed to investigate the prevalence of Non-Steroidal Anti- Inflammatory Drugs use among university students and assess their knowledge and practices toward its usage.

Methods:

A quantitative cross-sectional descriptive design was used. A convenient sample of 198 participants were recruited from two universities in Jordan. Data were collected on February 2020 by an instrument designed specifically by the researcher depending on previous literature to assess knowledge and practices regarding the use of Non-Steroidal Anti- Inflammatory Drugs among university students.

Results:

The results showed a good level of knowledge, [31.3%] of the students had used NSAID drugs during the previous month from data collection. The level of knowledge was higher among medical students than non-medical students and third and above years more than first and second year. Also, the results indicated that there is no significant difference in practice regarding the use of NSAIDs based on the academic year. However, according to practice, results were significant based on faculty type and gender. Male students used NSAIDs more than females.

Conclusion:

This study recommends activating the role of nurses in health promotion for NSAID use. It also suggests the need to develop strategies and policies to regulate the use of NSAIDs.

Keywords: Non-Steroidal anti-inflammatory drugs, Over-the-counter (OTC), University students, WHO, Self-medication, Jordan.

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1. INTRODUCTION

The World Health Organization (WHO) defined rational drug prescribing as “patients receiving medications appropriate to their clinical needs, in doses that meet their requirements for an adequate period of time, and the lowest cost to them and their community” [1]. One of the causes of irrational drug use is self-medication (SM). Self-medication refers to using “medi-

cines to treat self-diagnosed diseases without consulting any healthcare professionals [2]. Having adequate knowledge about medications is also a possible risk factor for self-medication among health sciences students. Non-steroidal anti-inflammatory drugs (NSAIDs) are groups of pain-relieving medications capable of providing analgesia and are commonly used worldwide to manage pain, inflammation, and illness [3]. NSAIDs are part of the medications patients can obtain to treat common diseases without a prescription from a physician, known as over-the-counter (OTC) or non-prescription medications [4]. In many countries as Jordan, NSAIDs are

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freely available over-the-counter (OTC). The use of OTC NSAIDs and other OTC analgesics appears to be widespread. The decision to make NSAIDs as OTC use may be related to its safety concern if used in a short term. Also, it is used in OTC-doses by adults without contraindications or interacting medications [4, 5]. NSAIDs are one of the most common medications used widely in primary healthcare because of their low abuse potential, strong efficacy, and long-term clinical use to reduce or relieve various types of pain [5]. They are known to reduce inflammation in osteoarthritis and musculoskeletal conditions, where they work to enhance recovery and promote mobility and physical activity. Additionally, NSAIDs are usually prescribed for lower back pain, osteoarthritis of the knee and shoulders, musculoskeletal trauma, rheumatology cases, dysmenorrhea, abdominal pain, headache, and high fever. NSAIDs are used as an analgesic for headaches, ear pain, and muscle and joint pain [6]. The use of NSAIDs in pain management is common and not usually controlled, such as aspirin, ibuprofen, and diclofenac [7]. The problem addressed in this paper is to assess the pattern of NSAID use among university students. NSAIDs are a widely used therapeutic group worldwide, particularly in the Arab world [7, 8].

Inappropriate self-medication can have several potential risks, for example, delay in seeking appropriate medical advice, failure to recognize or self-diagnose contraindications, interactions with prescribed medicinal products, failure to report current self-medications to the prescribing physician (risk of double medication and/or harmful interaction), inappropriate duration of use of medicine; risk of dependence and abuse [9]. The misuse of NSAIDs and lack of knowledge of their use are high among university students and widely practiced among medical students [10]. NSAIDs abuse can lead to very expensive and serious adverse events. Gastrointestinal, cardiovascular, and renal complications associated with NSAIDs have been shown to be dose-dependent [10]. Currently, there is limited research on NSAID use among university students in Jordan. Most published studies about medication use were conducted by pharmacists, even though nurses have an essential role in medication administration, users' education, and health promotion. So, this study aimed to investigate the prevalence of NSAID use among university students and assess their knowledge and practices toward its usage.

2. LITERATURE REVIEW

Non-Steroidal Anti Inflammatory Drugs (NSAIDs) are a class of medications used to treat acute and chronic pain. They are among the most commonly used medications, with a worldwide market of over \$6 billion each year [11]. A previous study showed that the reasons behind the prevalent use of NSAIDs could include the following: the desire to save money, the presence of minor health problems that do not need a visit to the physician, prior experience with NSAID efficacy, and the long waiting time at physician's clinic or hospitals [12]. The majority of university students select NSAIDs for the treatment of headaches [12]. In Jordan, self-medication among students was reported to be higher than in the Jordanian public (42.5%) [13]. This could be attributed to the higher level of medical and pharmaceutical knowledge about medications and

their uses among university students; thus, it is likely that this knowledge is sufficient to practice self-treatment [13]. A study on practices and behavior of female university students who used NSAIDs to manage Dysmenorrhea indicates that lack of history taking, inadequate knowledge, and patient satisfaction lead to inappropriate use [14]. In Libya, a study showed that neighbors and family, personal decisions, and the internet were frequent resources for NSAID use among students [15]. Another study reported that friends and family, chemists, and the internet were the three primary resources for NSAID use among undergraduate students in Nepal [16]. One documented predictor of NSAID use is the gender of the students. Some studies have shown that female students take NSAIDs more than male patients [17, 18].

3. MATERIALS and METHODS

3.1. Research Questions

1. What is the prevalence rate of NSAID use among university students?
2. What is the university students' level of knowledge about the use of NSAIDs?
3. What are the university students' practices regarding the use of NSAIDs?
4. Are there any differences in knowledge and practices regarding the use of NSAIDs based on selected studies' sociodemographic characteristics (gender, faculty type if a student is in a medical field or not during the undergraduate years, and academic year)?

3.2. Design, Sample, and Setting

The study was conducted using a quantitative cross-sectional descriptive design to investigate the prevalence of NSAID use among university students and assess their knowledge and practices toward using NSAIDs. A convenience sampling technique recruited participants from two universities in Amman city that reflect both governmental and private sectors. One Way ANOVA between group analysis of variance with Post Hoc test, independent sample t-test, and Pearson correlation coefficient were used as statistical tests for the current study. The total sample size was calculated based on conventional power analysis of medium effect size indicates a power of .80 and a level of significance at 0.05 [19]. For sample size calculation; based on the statistical test were used in the current study the estimated sample size was 180 participants required. Considering the dropout rate of 10% the total sample size is calculated to be 198 participants. The author used medium effect size because the medium size can have a reasonable overall impact and used in different previous studies about self-medication [20,21].

3.2.1. Measurement Tool

A structured tool was developed by the researcher. It was developed based on a comprehensive review of the literature to understand how the assessment of knowledge and practices regarding the use of (NSAIDs) were conducted. Search was performed using many keywords as (NSAIDs, Knowledge,

Practices and OTC). The search revealed (10 articles). The closely related articles (5 articles) were used in the tool development [22 - 27]. The tool consisted of three parts: The first part is a demographic data sheet to obtain background information about the participants, including age, gender, faculty name, academic year, obtaining previous pharmacology course, previous chronic disease, hearing about NSAIDs, using NSAIDs, and having medical/ health insurance. The second part assessed the students' knowledge regarding the use of NSAIDs, and the third part assessed the students' practices regarding the use of NSAIDs. Content validity was conducted, and Scale content validity index (SCVI) was (0.957).

A piloting for instrument content was conducted to determine the limitation and barriers of the tool by taking 30 participants with the same participants' criteria, similar settings, and the same data collection and analysis procedures. The piloting participants indicated that the items of the instrument were clear, comprehensive, and appropriate to its aim, and the contents of statements were written in simple language with a short stem. The time needed to complete it ranged from 5-10/min, the mean frequency of correct responses on the knowledge questions was used to summarize the scale and make comparisons across groups.

3.2.2 Scale Content Validity Procedure

Content validity was conducted, an online content validation form was sent to seven experts who were specialized academics and had experience in evaluating each item's relevancy and clarity. The panel of experts was four from Jordan and three from Iraq. The experts were distributed as the following: One professor in primary health care/community nursing, two professors in physiology & pathophysiology are working in the school of pharmacy at private university, four assistant professors in acute and critical care nursing are working in schools of nursing at universities in Jordan and Iraq. Clear instructions were provided to facilitate the content validation process, the experts were requested to critically review the domain and its items before providing a score on each item and they were encouraged to provide comments to improve the clarity and relevance of items to the targeted domain. All comments are taken into consideration to refine the domain and its items.

Upon completion of reviewing the domain and items, the experts were requested to provide a score on each item independently based on the clarity and relevancy of scale. The experts are required to submit their responses to the researcher once they have completely provided the score on all items. For clarity, the panel suggested to define the meaning of NSAIDs in the tool introduction and mentioning some examples because the participants were from non-medical faculties who cannot understand this concept. One of the expert advice is to change the way of answering some questions to multiple choice and to give suggestions for answers rather than to add narrative answers to facilitate the analysis process. Another expert suggested to restate some words in part two, for example, to

use a drug leaflet instead of a brochure.

For the relevancy of the items, each expert rated each item for its relevancy on a scale of (strongly agree, agree, neutral, disagree, and strongly disagree). Content validity indexes (CVI) were calculated *via* SPSS version 21. Seven raters were enrolled in the CVI calculation. First, item content validity index was calculated for each item by dividing the number of experts who had a rate of either strongly agree or agree by the total number of raters. Second, the scale content validity index was calculated by averaging all item content validity indexes. The initial scale content validity index was 0.79. The scale content validity index SCVI should be 0.90 or higher. Based on that, all items with I-CVI below 0.78 were deleted from the scale because I-CVI should be a minimum of 0.78 for 6 to 10 experts. When these items were deleted, SCVI improved to (0.957). The authors applied a content validity procedure based on Polit and beck reference [28].

3.3. Inclusion and Exclusion Criteria

Students enrolled in the Bachelor program, either users or non-users of NSAIDs from different faculties and nationalities, were included in the current study. In contrast, the students with chronic illnesses were excluded.

3.4. Ethical Considerations

The study was approved by the research and ethical committee, and IRB approval was obtained from the Universities that participated in this study (IRB # 2019-2020-2-4). The authors followed the guidelines of Helsinki Declarations; participation in this study was voluntary, and participants were informed that they had the right to withdraw from this study at any time. The researcher confirmed to participants that the collected data would be used anonymously. Participants' confidentiality was assured; each participant was given an identification number without using his/her name. Data is entered into a computer using the coded numbers. After analysis of the data, the questionnaires were archived in a locked box for two years and then it will be shredded.

4. RESULTS

Two hundred and thirty questionnaires were distributed, and 198 were returned and included in the final analyses, ending with an 86% response rate. A data cleaning process was conducted, and the mean replaced 5 missing answers related to the participants age variable. Table 1 shows that (49.5%) of the study sample were males and (50.5%) were females, (49%) of the sample represented the medical faculties, and most of them (27.3%) were at the fourth or fifth of the study's level. The table also shows that (32.3%) of the students have studied pharmacology courses, and (34.8%) have heard about NSAIDs.

Regarding the prevalence rate of NSAID use among university students' results shows that (31.3%) of the students have used NSAIDs, while (46.5%) of them did not, and (22.2%) did not know if they used NSAIDs or not.

Table 1. Descriptive statistics of the study sample characteristics (N=198).

Variable	Frequency	Percentage
Gender		
Male	98	49.5
Female	100	50.5
Faculty type		
Medical	97	49.0
Non-medical	101	51.0
Academic level		
First year	49	24.7
Second year	49	24.7
Third year	46	23.2
Fourth and above year	54	27.3
Pharmacology course		
Yes	64	32.3
No	134	67.7
Chronic disease		
Don't have any chronic diseases	198	100
Have you ever heard about NSAIDs?		
Yes	69	34.8
No	91	46.0
Don't know	38	19.2
Insurance		
Yes	141	71.2
No	57	28.8
Salary		
Less than 500	27	13.6
500-1000	119	60.1
More than 1000	52	26.3
University type		
Governmental	172	86.9
Private	26	13.1
Age		
Mean	20.73	
S.D	1.66	

The total level of knowledge for the whole sample was (75.58%) indicating a good level of Knowledge according to the classification scores developed by the researcher based on previous literature as poor knowledge (<50%), moderate knowledge (50-69.9%) and good knowledge (>70%). Regarding students' knowledge, Table 2 shows the result; it comprises 15 questions with true and false answers; the true answers were obtained from all participants, and results in the average score of knowledge for correct answers were (75.58%).

As shown in Table 2, most of the participants had good knowledge about the use of NSAIDs, where the average of their knowledge was (75.58%). The highest percent of knowledge (92.9) was scored for "you can take ten or more tablets per day from Ibuprofen if you have severe pain." However, (88.9%) of the participants know to "consult your doctor before using NSAIDs if you have Kidney disease." The lowest percent of knowledge (53%) reported for the question,

"You can take NSAIDs before or after a meal."

Results indicate that (31.3%) of the students have used NSAID drugs during the previous month, (46.5%) did not use NSAID, and (22.2%) don't know if they used NSAID during the last month. The knowledge level of those who did not know whether they had taken NSAIDs was 72.58% and those who knew they had taken NSAIDs was 77.62%, while those who knew they had not taken NSAIDs was 76.53%, with no significant differences on knowledge level among these groups ($P = .177$). The result indicated that (17.2%) of students either use aspirin, (13.1%) ibuprofen, Voltaren, or voldfast, and (13.1%) don't know the medication name. Results indicated that there is no significant difference in knowledge regarding the use of NSAIDs based on gender, while its significant based on faculty type and the academic year. Students at Medical faculties have more knowledge than those at non-medical faculties, and students in the third and fourth years and above have more knowledge about NSAIDs than students in the first and second years, as presented in Table 3.

Table 2. Student’s level of knowledge about the use of (NSAIDs).

Knowledge’s Question	Correct Answer	Frequencies N=198	Percent %
Aspirin, ibuprofen, and voltarine are examples of NSAIDs	True	147	74.2
Paracetamol [Panadol, Revanin] is an example of a non-steroidal anti-inflammatory	False	123	62.1
You can take 10 or more tablets per day from Ibuprofen[60mg] if you have severe pain	False	184	92.9
You can take voltarine 50 mg every two hours during the day	False	156	78.8
Consult your doctor before using NSAIDs if you have respiratory asthma	True	165	83.3
Consult your doctor before using NSAIDs if you have Kidney disease	True	176	88.9
Consult your doctor before using NSAIDs if you have High Blood pressure or Heart Disease	True	166	83.8
Consult your doctor before using NSAIDs if you have sleep disorder	True	147	74.2
NSAIDs are safe and have no side effects	False	135	68.2
You cannot take NSAIDs if you are allergic to any of their ingredients	True	171	86.4
NSAIDs reduce inflammation and pain caused by bone and joint diseases	True	144	72.7
You can take NSAIDs before or after a meal	False	105	53.0
NSAIDs can cause gastric or peptic ulcers	True	154	77.8
NSAIDs have no drug interactions with other drugs	False	135	68.2
You can prescribe NSAIDs to any of your colleagues when they complain of pain	False	137	69.2
Average score			75.58

Table 3. Difference in knowledge based on (gender, faculty type, and academic year).

Variable		Mean	Std. Deviation	T	Sig
Gender	Male	74.69	16.9077	-0.706	0.481
	Female	76.46	18.3605		
Faculty type	Medical	78.55	17.1385	2.3	0.02
	Non-medical	72.73	17.7162		
-	-	-	-	F	Sig
Academic year	first year	69.79	15.46336	7.007	0.00
	second year	70.34	19.10013		
	third year	81.88	14.86529		
	fourth and above year	80.24	17.58676		

The chi-square test has been used to answer if there is any difference in practice regarding the use of NSAIDs based on (gender, faculty type, and academic year). Results indicated that there is no significant difference in practice regarding the

use of NSAIDs based on the academic year. At the same time, it is significantly based on faculty type (Students at Medical faculties used NSAIDs more than students at non-medical faculties) and gender (male students used NSAIDs more than females), as presented in Table 4.

Table 4. Difference in practice based on gender, faculty type and academic year.

Difference in practice based on gender			
NSAIDs practice	Gender		Sig
	Male	Female	
Yes	32	30	0.015
	33.7%	30.9%	
No	49	36	
	51.6%	37.1%	
Don’t know	14	31	
	14.7%	32.0%	
Difference in practice based on faculty type			
NSAIDs practice	Faculty type		Sig
	Medical	Non-medical	

(Table 4) contd.....

Difference in practice based on gender					
Yes	41		21		0.00
	42.7%		21.9%		
No	47		38		
	49.0%		39.6%		
Don't know	8		37		
	8.3%		38.5%		
Difference in practice based on academic year					
NSAIDs practice	Academic year				Sig
	1	2	3	4	
Yes	10	10	18	24	0.07
	20.8%	21.7%	39.1%	46.2%	
No	24	22	19	20	
	50.0%	47.8%	41.3%	38.5%	
Don't Know	14	14	9	8	
	29.2%	30.4%	19.6%	15.4%	

5. DISCUSSION

The participants of the study were almost equally divided into male and female participants. Medical faculties' students comprised around half of the study sample, with around the same from non-medical faculties. All students had no chronic diseases, while only one-third of the sample was familiar with the term NSAID. Around 75% of the participants were medically insured, and the mean age was 20.7 years old. Finally, the vast majority of participants were from governmental universities.

According to the results of this study, around one-third of the students (31.3%) used NSAIDs, while just less than a half (46.5%) did not use NSAIDs, and 22.2% were unaware if they used one of the NSAIDs or not, according to the percent of 22.2% that indicates that the students were unaware if they used one of NSAIDs or not, those students may use varied OTC pain killer and they know how to use these medications, but they were not oriented about the scientific group label of the NSAID. This study's average scores of knowledge items reflected that students have proper knowledge (75.8%) of NSAID use. In relevance to these findings, Yadav and Rawal conducted a study focusing on self-medication in low-income countries; the prevalence ranged between 45% and 98% in different countries. The main factors associated with self-medicating were low severity of symptoms, financial issues, and accessibility to over-the-counter drugs without medical prescription [18]. In line with this, another study that aimed to determine factors related to self-medication use among medical students in Serbia, the finding revealed that the majority of medical students (80%) self-medicate, and among the medications without a prescription, NSAIDs were reported to be the most frequently used self-medication [29].

A study's findings reflected a lack of knowledge and improper practices regarding self-medication; however, adult Jordanians showed an increased willingness to learn about self-medication. The most frequently reported channels for gaining this knowledge were via the internet, social media, and medical magazines/ brochures [30]. A study conducted in Nepal by Bhattari *et al.* [16] aimed to investigate undergraduate pharmacy students' behaviors, practices, and attitudes toward self-medication. A descriptive cross-sectional method was

used, and a total of 175 respondents filled out the questionnaire. The main sources of knowledge among pharmacy students regarding self-medications were pharmacist's advice (63.5%), reading package label (25.3%), personal experience (21.1%), personal knowledge (16.5%), and family and friends (13.5%) [16]. On the other hand, the overuse of medications among university students without proper indication or physician's prescription may be due to the lack of knowledge about the rational use of these medications and the availability of these medications to be used for the students without the need for medical prescription.

In the study of Yadav and Rawal, which investigated self-medication practices in low-income countries through reviewing literature related to self-medication usage in these countries, the findings indicated that lack of knowledge about rational self-medication use and limited control over medications availability had caused many health issues among users of such medications [18]. The last part of the results regarding self-medication practices was concerned with the most commonly used NSAIDs as self-medications.

According to the results of the current study, the most frequently used NSAIDs were Aspirin, Ibuprofen, Voltaren, and Voldfast. Similar results were found in the retrospective descriptive study [31] conducted in Jordan, aiming to examine the patterns of prescribing NSAIDs at family clinics, reviewing a total of 2027 patient files. Results related to the most commonly used types of NSAIDs showed that the commonly prescribed NSAID was Diclofenac (Voltaren) [45%], followed by aspirin (30%) [31], which are among the most frequently used medications in our study too. Both knowledge and practices related to NSAID uses were tested.

In terms of knowledge, the study's findings revealed significant differences in knowledge based on faculty type and academic year. In contrast, no significant difference in knowledge was attributed to gender. Students of medical specialties scored higher in knowledge regarding NSAIDs. As such, senior students (3rd and 4th years) scored higher than junior students (1st and 2nd year). In congruence with these findings, the results of the study, conducted in Pakistan, showed that medical faculties students who are in clinical years (3rd, 4th, and 5th) were relatively more aware of the uses of self-medications than preclinical students (1st and 2nd year);

nonetheless, all medical students reported high prevalence of self-medicating [32].

In terms of practice, the current study's results showed significant differences in faculty type and gender. Still, no significant difference in practices was affiliated with the academic year. Medical faculties' students scored significantly higher in terms of practices related to the use of NSAIDs. In relation to this, Ibrahim *et al.* study found that the prevalence of NSAID use among medical students in Saudi was very high despite awareness of its adverse effects [33]. Specialized knowledge gained at medical colleges might act as a driving force for medical students to use NSAIDs with less caution [34]. Also, in terms of differences in practice related to gender, the findings of the study reflected that a significantly higher number of males were found to use NSAIDs as over-the-counter drugs compared to their female counterparts [35].

The knowledge provided by this study will give awareness to nurses regarding the importance of their role in educating patients regarding the appropriateness and the uses of self-medications, including NSAIDs and other over-the-counter drugs covering indications, side effects, contraindications, and when to seek help and guidance from physicians. Counseling is one of the main nursing roles that can't be ignored.

University students in all faculties should be given courses about medications, educating the students on the limits and acceptable practices of NSAIDs. In Jordan, university students can select a course entitled "Health Education," modifying the content of this course to cover medication use and practice; making this course mandatory for all students is recommended. NSAID use should be restricted among university students and the general public. Health authorities and pharmaceutical companies should implement more guided safety measures regarding self-medications. Strict policies need to be implemented by the Government and other stakeholders on the advertising and selling of medications to prevent this problem from escalating. Strategies should be formulated and policies enforced to avoid supplying NSAIDs without prescription.

6. LIMITATIONS

Only two universities were included in this study. Future research can provide better generalizability by increasing the number of universities and the sample size. Settings of the study included universities in Amman only; future research can also better represent universities both sectors in Jordan (by having universities from governmental and private) located in different cities and areas in Jordan (North, Center, and South).

A methodological limitation might be that the survey only provided a snapshot of the university students' knowledge and practices regarding the uses of NSAIDs in one period of time; the tool was developed by the researcher as described in the procedure section without conducting exploratory factor analysis; in addition, according to nature of the topic of the current study; the social desirability is considered as another limitation.

CONCLUSION

The study showed that overall, there is a good level of knowledge among university students about NSAID use; 31.3% of the students had used NSAIDs during the previous month. Furthermore, the level of knowledge was higher among medical students than non-medical students and higher among

third and fourth and above years than in first and second years. Results showed that gender is not a factor influencing students' NSAIDs knowledge. However, gender significantly influenced their practice-based knowledge, as it was higher in males than females. There is also a difference in practice based on faculty type (medical students showed higher practice-based knowledge than non-medical). Finally, there is no difference in practice based on the academic year.

The authors recommend in this study to activate nurses' roles in medication education, expand students' curriculum plan to include medication use under the outline of the health education course and mandate it for all university students. The authors recommend to conduct future qualitative research on this topic to search for the reason to use an NSAID among university students rather than seeking appropriate medical care. Also, conducting future studies to compare the results with other variables as being previously aware of the medication or not is recommended.

AUTHORS' CONTRIBUTION

WAM collected data, analyzed the results, and wrote the manuscript. RAD analyzed and collected data and revised the paper. GAD contributed to the design, implemented the research, and participated in instrument development, analysis of the results, and manuscript writing.

LIST OF ABBREVIATIONS

NSAIDs	=	Non-Steroidal Anti-Inflammatory Drugs
OTC	=	Over-the-counter
SM	=	Self-medication
WHO	=	World Health Organization

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the research and ethical committee, and IRB approval was obtained from the Universities that participated in this study (IRB # 2019-2020-2-4).

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

STANDARDS OF REPORTING

STROBE guidelines have been followed.

AVAILABILITY OF DATA AND MATERIAL

No data are associated with this article; the data supporting the findings of this study are available from the corresponding author [G. Al-D], on special request.

FUNDING

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

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