

ORIGINAL ARTICLE

Knowledge, Attitudes, and Practices of Medical University Students Toward Antibiotics and Antimicrobial Resistance

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Received: April 29, 2024

Accepted: November 11, 2024

DOI:

<https://doi.org/10.35516/jmj.v59i5.2604>

Abstract

Background: Antimicrobial resistance (AMR) is a growing concern worldwide. The inappropriate use of antibiotics leads to antibiotic resistance, which reduces their efficacy. Assessing awareness is, therefore, critical in the effort to confront the spread of antibiotic resistance. Medical students are potential antimicrobial prescribers and stewards following graduation as clinicians. The education of undergraduate students is likely to influence their practices. Assessing awareness is critical in the general effort to confront the spread of antibiotic resistance. Appropriate studies regarding the knowledge, attitudes, and practices of medical students in Jordan regarding antibiotic use and antimicrobial resistance are nonexistent. The aim of this study was to assess knowledge regarding antibiotic use and resistance among medical students in Jordan in their clinical years.

Methods: A cross-sectional study was performed, using a sampling frame of medical students of the 4th, 5th, and 6th academic years at the Jordan University of Science and Technology. A total of 587 students were involved. The study was conducted from November 1st, 2022 to February 1st, 2023. The survey was anonymous and self-administered. The data were collected from an online survey questionnaire and analyzed.

Results: A total of 587 students responded; 42.9% were male (n=252) and 57.0% female (n=335). The response rate was 94%. 87% desired more education on antibiotic use and resistance. The majority (64.7%) of respondents had good knowledge of antibiotic use and resistance; however, 39% incorrectly answered that bacteria would cause common cold. Only 56.0% reported positive practice of antibiotic use. While 8.2% of respondents always consulted a clinician before starting an antibiotic, and 37.2% never discarded their remaining leftover medications. Knowledge was significantly associated with the academic year (p<0.0001).

Conclusion: This study provided the first prevalence data on antibiotic use and knowledge of antibiotics and AMR among medical undergraduate students in Jordan. The study results indicated that current medical education has appropriately influenced the quality use of antibiotics among medical students in Jordan.

Keywords: antibiotic use ,antibiotics resistance, medical students, knowledge, practice, Jordan.

Introduction:

Antimicrobial resistance is a growing concern worldwide. The inappropriate use of antibiotics leads to antibiotic resistance, which reduces their efficacy. Assessing awareness is, therefore, critical in the effort to confront the spread of antibiotic resistance. Medical students are potential antimicrobial prescribers and stewards following graduation as clinicians. The education of undergraduate students is likely to influence their practices. Assessing awareness is critical in the general effort to confront the spread of antibiotic resistance.

Material and methods.

Questionnaire development.

A literature search and analysis of similar studies were performed [19-29]. Based on the results of this analysis, potential questions were formulated. The knowledge, attitude and practice (KAP)questionnaire was developed in English and piloted in a group of medical students at different universities. Students were asked to provide their opinion

regarding the relevance and difficulty of questions. Following the discussion and considering their comments, the final version of the questionnaire was developed. It contained a total of 50 questions distributed among 4 sections: 3 demographics, 15 knowledge, 16 attitudes, and 16 practices.

Sampling:

The study was conducted from November 1st, 2022, to February 1st, 2023. The sampling frame consisted of medical students in the 4th, 5th, and 6th academic years at Jordan University of Science and Technology. An online cross-sectional survey instrument questionnaire was distributed. Random cluster sampling was used with a confidence interval/margin of error of 10 and a confidence level of 95%. The total number of questionnaires distributed to participants was 620: 25.1% (n=156) in their 4th year, 32.9% (n=204) in their 5th year, and 41.9% (n=260) in their 6th year. A total of 587 students responded with a response rate of 94%; 42.9% were male (n=252) and 57.0% female (n=335).

Table 1: Socio-demographic characteristics of respondents

Variable	Percentage %
Gender	
Male	42.9 %
Female	57.8%
Class of Students	
4 th	24.7%
5 th	32.8%
6 th	42.4%

Survey.

A cross-sectional study was performed. The survey was anonymous and self-administered. The data were collected from

an online survey questionnaire. E-mail invitations for participation containing the online survey link and the information sheet for participants were disseminated to the

targeted participants. The survey was also distributed among the students through the WhatsApp application to increase the response rate.

Data analysis

Data analysis was conducted in Stata 14.0. Descriptive statistics were used to generate frequencies, percentages and proportions. Where relevant, the Chi-square test was used to determine any statistical significance.

Results:

This cross-sectional study aimed to assess knowledge, attitude and practice (KAP) regarding antimicrobial resistance and antibiotic use among fourth, fifth and sixth-year medical students in Jordan. An online cross-sectional survey instrument questionnaire was distributed. Random cluster sampling was used with a confidence interval/margin of error of 10 and a confidence level of 95%. The findings of this

study provide the first prevalence data on antibiotic use and knowledge of antibiotics and AMR among medical undergraduate students.

Knowledge:

92.33% of respondents thought that antibiotics could cure bacterial infections, while 5.75% thought bacteria could not, and 1.93% were unsure. 9.23% thought that antibiotics could cure viral infections, 82.27% thought that viruses could not, and 5.50% were unsure. There was a statistically significant difference by medical student year ($p < 0.0001$). 15.92% of respondents thought bacteria could cause the common cold and influenza. There was a statistically significant difference both by gender ($p = 0.01$) and by medical school year ($p = 0.03$). Regarding antibiotic resistance, 90.09% had heard about it, which was an encouraging percentage compared to similar studies.

Table 2 Knowledge

	Medical year	Yes (%)	Undecided (%)	No (%)
Can Antibiotics cure the bacterial infection?	6 th	95.30%	2.91%	1.78%
	5 th	94.36%	3.09%	2.55%
	4 th	87.32%	11.24%	1.44%
	Total	92.33%	5.75%	1.93%
Can Antibiotics cure Viral infections?	6 th	9.64%	5.06%	85.30%
	5 th	11.34%	7.08%	81.58%
	4 th	6.72%	13.37%	79.91%
	Total	9.23%	8.50%	82.27%
Bacteria cause the common cold and Influenza?	6 th	16.70%	2.07%	81.23%
	5 th	16.30%	6.83%	77.05%
	6 th	15.91%	11.03%	73.06%
	Total	16.3%	6.64%	77.11%
Have you heard of Antibiotics Resistance?	6 th	95.07%	2.10%	2.83%
	5 th	94.97%	2.89%	2.14%
	4 th	90.09%	7.36%	2.55%
	Total	93.37%	4.12%	2.5%

Attitude:

Nearly 48.12% of respondents agreed that the uncontrolled use of antimicrobials could lead to the emergence of resistance, but 21.70% did not agree. There was a statistically significant difference by medical school year ($p < 0.0001$). 13.68% did not agree with the definition of antimicrobial resistance. There was a statistically significant difference by medical school year ($p = 0.021$). 80.19% recognized that antibiotic resistance was an essential and severe global public health issue. There was a statistically significant difference by medical school year ($p = 0.013$).

More than half of participants (70.28%) thought that frequent use of antibiotics would decrease treatment efficacy when using the antibiotics again, but 16.51% did not agree, and 13.21% were unsure. There was no statistically significant difference by gender or medical school year. 44.34% thought the efficacy was better if the antibiotics were newer and costlier, though 32.08% did not agree, and 22.64% did not know. There was a statistically significant difference both by gender ($p = 0.001$) and by medical school year ($p = 0.007$). A quarter of participants (25%) agreed that uncontrolled and disorganized use of antibiotics might contribute to treatment efficacy. There was a statistically significant difference by medical school year ($p < 0.0001$).

More than half of participants (77.36%) agreed that uncontrolled use of antibiotics

might prolong disease. There was a statistically significant difference by medical school year ($p < 0.0001$). Only 24.53% erroneously agreed that due to un-systemic use of antibiotics, the additional costs for the patient might decrease. There was a statistically significant difference by medical school year ($p < 0.0001$). Nearly 83.49% agreed that if taken less frequently, the antibiotics would not work in the future. There was a statistically significant difference by medical school year ($p < 0.0001$).

Most participants (85.85%) agreed that there was abuse (taken too frequently or when there is no necessity) of antibiotics. Similarly, 83.96% agreed that antibiotic resistance has become a problem. 75.00% agreed that the abuse of antibiotics had become the leading cause of bacterial resistance. 60.38% considered that antibiotic resistance affected them and their family's health. There was no statistically significant difference for these statements according to gender or medical school year.

A significant number of participants (93.40%) agreed that it was necessary to get more education about antibiotics, and 79.25% thought that it was necessary to establish a course on 'rational use of antibiotics'. There was a statistically significant difference by medical school year ($p < 0.0001$). The frequency of responses to different statements regarding attitudes to AMR and antibiotics is presented in Table 3.

Table 3. Attitudes towards antibiotics and AMR

	Agree	Unsure	Disagree
Antibiotics are safe drugs. Hence they can be commonly used*	40.57%	12.74%	46.70%
Skipping one or two doses does not cause the development of antibiotic resistance	49.06%	15.09%	34.38%
Adverse effects of antimicrobials are reduced by using more than one antibiotic at a time**	28.77%	24.53%	46.23%
Unnecessary use of antimicrobials shortens the duration of illness*	21.70%	16.04%	61.32%
When you have a cough and sore throat, use of antimicrobials will contribute to the emergence of resistant strains	50.47%	21.70%	27.83%
When I have a cold, I should take antibiotics to prevent getting a more severe illness*	38.21%	8.96%	51.41%
When I get a fever, antibiotics help me to get better more quickly***	44.81%	14.62%	40.56%
Whenever I take an antibiotic, I contribute to the development of antibiotic resistance	48.12%	21.70%	29.25%
AMR is an essential and severe public health issue facing the World**	80.19%	11.79%	7.55%
AMR is an essential and severe public health issue in Jordan	74.53%	16.51%	8.50%

* There was a statistically significant difference in medical students' year when ($p < 0.0001$); ** there was a statistically significant difference in medical students' year ($p = 0.005$); *** there was a statistically significant difference medical students' year ($p = 0.002$)

57.55% of the students reported that they would often stop taking antibiotics if they started to feel better. 49.53 % would not keep the remaining antibiotics and 49.53% would

discard them. 95.28% of medical student consulted doctors before starting antibiotics and 93.4% of them checked expiry dates (Table 4).

Practice:

Table 4. The practice of using antibiotics

	YES (%)	NO (%)
The doctor prescribes a course of antibiotics for you. After taking 2–3 doses, you start feeling better.		
Do you stop taking further treatment?*	57.55	42.45
Do you save the remaining antibiotics for the next time you get sick?*	56.60	43.40
Do you discard (throw away) the remaining leftover medication?*	49.53	50.47
Do you give the leftover antibiotics to your friend if they get sick?***	46.23	53.77
Do you consult a doctor before starting an antibiotic?	95.28	4.72
Do you check the expiry date of the antibiotic before using it?****	93.40	6.60
Do you use antibiotics when you ...		
... Have Fever?	79.25	20.75
... Have a Common cold?****	52.83	47.17
... Have Acute bronchitis?*	83.02	16.98
... Coughing up yellow/green sputum?****	77.36	22.64
... Have Sore throat?****	66.51	33.49
... Have Cough with fever?	83.02	16.98
... Have Congested nose with a headache?****	43.87	56.13
... Coughing up white sputum?*	58.96	41.04
... Has the cough lasted 2 weeks or more?****	76.89	23.11
When you catch a common cold, do you ask a doctor to prescribe antibiotics?****	49.06	50.94

* There was a statistically significant difference by medical students' year when ($p < 0.0001$); ** there was a statistically significant difference by medical students' year ($p = 0.005$); *** there was a statistically significant difference by medical students' year ($p = 0.001$); **** there was a statistically significant difference by medical students year ($p < 0.05$)

DISCUSSION:

Antimicrobial resistance (AMR) presents a growing concern worldwide, becoming a global problem and emerging threat to public health worldwide [1]. In 2001 WHO provided a program to slow the emergence of AMR and reduce the number of resistant microorganisms, and in 2012, it published the Options for Action [2]. According to WHO, “AMR is a high-priority issue to be resolved by collective global action” [3, 4]. Medical students are potential antimicrobial prescribers and stewards following graduation as doctors. It is necessary to address this problem among medical students in the same way in the hospital setting. Understanding medical student knowledge, attitudes, and practices towards antimicrobial resistance is paramount in this context.

Antibiotics are an essential part of care in multiple fields of medicine, and the increase of resistant microorganisms raises the costs for effective treatment and endangers the life of patients in general, causing higher morbidity and mortality rates. Some of the main reasons for AMR are the availability of over-the-counter antibiotics, self-medication, inappropriate use and non-compliance, over-prescription by physicians, and the need for increased knowledge among the general population and specialists. Appropriate studies are rare, and none exist regarding the situation in Jordan [5]. The education of undergraduates is likely to influence their practices. Assessing awareness is critical in the general effort to confront the spread of antibiotic resistance.

This is the first survey to explore the knowledge, attitude and behavior regarding antibiotic use among medical student students in Jordan. Generally, the obtained results corresponded to the findings from the studies performed in other countries.

However, there were some differences as well. 74.94% of our respondents were aware that antibiotics cure bacterial infections, as are around 92% of medical students in China [6,7], 93.3% in UAE [8], 95.2% in Italy [9], 98% in India [10], and 70.4% in Jordan [5].

Half of the participants (57.08%) thought that antibiotics cannot treat viral infections, which is comparable to medical students in China 64.5 [6], 65.8% in UAE [8], 83.2% in Italy [9], 55% in India [10], 71.9% in Jordan [5]. 64.15% know bacteria do “NOT” cause the common cold and influenza. This is comparable to 76% of medical students in India [10] and 71.9% in Jordan [5].

Most participants, (83.02%) have heard of antibiotics resistance, as have 94.7% of medical students in China [6], 84.5% in UAE [8] and 93% in India [10]. 84.28% agree with the AMR definition, and 93.9% of medical students in Italy [9]. Most (94%) of Sri Lanka pharmacy students were aware of the definition of antibiotic resistance and 76% of antimicrobial resistance [11]. 70.28% thought that frequent use of antibiotics would decrease treatment efficacy when using antibiotics again. Likewise, 87.9% of medical students in China [6], 82.4% in Ethiopia [12] and 97% in India [10] gave a similar response.

Less than half of participants (32.08%) did not think that the efficacy is better if the antibiotics are newer and more expensive; this is similar to 81.5% of medical students in China [6], 72.5% in UAE [8] and 60% in India [10]. 56.60% agreed that the uncontrolled use of antibiotics leads to resistance. This is comparable to 97% of medical students in the US [13], 94.1% in Ethiopia [12], 93.9% in Italy [31], and 95.1% in Malaysia [14]. 77.36% of our respondents thought this might prolong the disease, while 84.3% in Jordan [5]. 46.23% thought

antibiotics cannot speed up the recovery of colds and flu. The same responses were recorded in 27.4% of medical students in China [6], 34.2% in UAE [8], 35% in Ethiopia [12], and 72% in India [10].

Most participants (85.85%) agreed that there is an abuse of antibiotics at present; similar to 85% of medical students in China [6, 15], 91.3% in UAE [8], 87.5% in Congo [16], 93% in India [10]. 83.96% of respondents agreed that antibiotics resistance has become a problem; likewise, 82.84% of medical students in China [6], 47.8% in UAE [8], 94.0% in France [34], 70.6% in Ethiopia [12], 99% in India [10] and a majority in Congo [16]. 75% agreed that the abuse of antibiotics has become a primary cause leading to AMR, similar to 83.88% of medical students in China [6], 79.2% in UAE [8] and 95% in India [10]. Nearly 60.38% thought that AMR affects them and their family's health in comparison to 81.9% of medical students in China [6], 70.8% in UAE [8], 90.7% in Ethiopia [12], and 92% in India [10]. Mostly, 93.40% agree that more education on antibiotics is necessary; likewise, 89.2% of medical students in China [6], 97.2% in UAE [8], 94% in India [10], 90.0% of Miami students would like to get more education on antimicrobials and 79% on antimicrobial resistance [17].

Although a good level of knowledge was found in this study, there still needs to be more areas of antibiotic use, especially the part on the appropriate antibiotic use for specific disease conditions, as some mistakenly considered antibiotic therapy for viral conditions. The current study findings provide baseline data for future research studies. However, further research is needed on this topic, primarily to assess the attitudes and practice of antibiotic use among the students rather than just focusing on

knowledge so that appropriate interventions can be carried out. Awareness of the proper use of antibiotics among students is significantly required to correct their misconceptions and prevent the rise of antimicrobial resistance.

Limitations

In this study, we did not introduce questions to assess participant knowledge regarding the causes of AMR. Also, it would have been interesting to compare medical students with medical students from different universities in Jordan. The present study has the advantage of being prospective and using a standardised questionnaire. Furthermore, we used self-reported data. Therefore, the study is susceptible to information and recall bias. This issue may have influenced our results to some extent. Finally, there were limitations inherent to the cross-sectional design that prevented the exploration of causality and confounding factors.

CONCLUSION

In conclusion, the findings of this study provided the first prevalence data on antibiotic use and knowledge of antibiotics and AMR among Just Medical undergraduate students. The study results indicated that current medical education has appropriately influenced the quality use of antibiotics among medical students in Jordan. Nevertheless, gaps remain in students' knowledge. A collaborative and strategic education plan for all Jordanian medical undergraduates would likely significantly impact antibiotic knowledge and AMR among medical undergraduate students in Jordan. Furthermore, strict policies must be enforced to regulate the procurement of antibiotics and prohibit their purchase without a prescription.

Appropriate studies are rare, and none

exist regarding the situation in Jordan. The education of undergraduates is likely to influence their practices. Assessing awareness is critical in the general effort to confront the spread of antibiotic resistance.

REFERENCES

1. Akova M. Epidemiology of antimicrobial resistance in bloodstream infections: Virulence. 2016 Apr 2; 7(3):252–66.
2. WHO. Global action plan on AMR. 2016. <https://www.who.int/antimicrobial-resistance/global-action-plan/en/> Accessed 09.Aug.2019.
3. Sameer Dhingra, Nor Azlina A. Rahman, Ed Peile, Motiur Rahman, Massimo Sartelli, Mohamed Azmi Hassali, Tariqul Islam, Salequl Islam and Mainul Haque Microbial Resistance Movements: An Overview of Global Public Health. Threats Posed by Antimicrobial Resistance, and How Best to Counter. *Frontiers in Public Health* www.frontiersin.org 1 November 2020 | Volume 8 | Article 535668
4. Ayuokebong JA, Ntemgwa M, Atabe AN. The threat of - antimicrobial resistance in developing countries: causes and control strategies: *Antimicrobial Resistance & Infection Control*. 2017; 6(1):47.
5. Suaifan Ghadeer, Shehadah Mayadah, Darwish Dana, Al-Iljel Heba, Yousef Al Motasem M, Darwish Rula M: A cross-sectional study on knowledge, attitude and behavior related to antibiotic use and resistance among medical and non-medical university students in Jordan: *African Journal of Pharmacy and Pharmacology* Vol. 6(10), pp. 763-770, 15 March 2012.
6. Yanhong Hu ID, Xiaomin Wang, Joseph D. Tucker, Paul Little, Michael Moore, Keiji Fukuda and Xudong Zhou. Knowledge, Attitude, and Practice Concerning Antibiotic Use among Chinese Medical Students: A Multicentre Cross-Sectional Study: *Int. J. Environ. Res. Public Health* 2018, 15, 1165; doi: 10.3390/ijerph15061165
7. Huang Y, Gu J, Zhang M, et al. Knowledge, attitude and practice of antibiotics: a questionnaire study among 2500 Chinese students.: *BMC Med Educ*. 2013 Dec; 13(1):163
8. Jairoun A, Hassan N, Ali A, et al. Knowledge, attitude and practice of antibiotic use among university students: a cross-sectional study in UAE: *BMC Public Health*. 2019 Dec; 19(1):518.
9. Scaioli G, Gualano MR, Gili R, et al. Antibiotic Use: A Cross-Sectional Survey Assessing the Knowledge, Attitudes and Practices amongst Students of a School of Medicine in Italy. Manzoli L, editor: *PLoS ONE*. 2015 Apr 1; 10(4):e0122476.
10. Khan A, Banu G, Reshma KK. Antibiotic Resistance and Usage—A Survey on the Knowledge, Attitude, Perceptions and Practices among the Medical Students of a Southern Indian Teaching Hospital: *Journal of Clinical and Diagnostic Research*. 2013 Aug; 7(8):1613-1616.
11. Jamshed SQ, Rajiah K, et al. Understanding antibiotic use and resistance among final-year pharmacy and medical students: a pilot study: *J Infect Dev Ctries*. 2014 Jun 11; 8(06):780–5.
12. Seid MA, Hussen MS. Knowledge and attitude towards anti-microbial resistance among final year undergraduate paramedical students at University of Gondar, Ethiopia: *BMC Infect Dis*. 2018 Dec; 18(1):312
13. Abbo LM, Cosgrove SE, Pottinger PS, et al. Medical Students' Perceptions and Knowledge About Antimicrobial Stewardship: How Are We Educating Our Future Prescribers? : *Clinical Infectious Diseases*. 2013 Sep 1; 57(5):631–8.
14. Brahmabhatt KR, Patel AB. Knowledge of antimicrobial re-resistance among undergraduate medical students in a medical college of Gujarat: institution based cross-sectional study: *Int J Community Med Public Health*. 2018 Jan 24; 5(2):754-8.
15. Hu Y, Wang X, Tucker J, et al. Knowledge, Attitude, and Practice Concerning Antibiotic Use among Chinese Medical Students: A Multicenter Cross-Sectional Study: *International Journal of*

ACKNOWLEDGEMENTS:

The authors would like to thank the students that took part in this study for their time and effort.

- Environmental Research and Public Health. 2018 Jun 4; 15(6):1165.
15. Thriemer K, Katuala Y, Batoko B, et al. Antibiotic Prescribing in DR Congo: A Knowledge, Attitude and Practice Survey among Medical Doctors and Students. Meng X, editor: PLoS ONE. 2013 Feb 18; 8(2):e55495.
16. Helena Ferreira Leal MSc, Claudia Mamani BSc, Caroline Quach MD, MSc, FRCPC, Emilie Bédard PhD. Survey on antimicrobial resistance knowledge and perceptions in university students reveals antibiotic use and procurement trends: Official Journal of the Association of Medical Microbiology and Infectious Disease Canada 7.3, 2022

المعرفة والمواقف والممارسات لدى طلاب الجامعات الطبية تجاه المضادات الحيوية ومقاومة مضادات الميكروبات

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الملخص

خلفية الدراسة : الاستخدام غير المناسب للمضادات الحيوية يؤدي إلى مقاومة المضادات الحيوية، مما يقلل من فعاليتها. من المرجح أن يؤثر تعليم الطلاب الجامعيين على ممارساتهم. يعد تقييم الوعي أمراً بالغ الأهمية في الجهد العام لمواجهة انتشار مقاومة المضادات الحيوية. تشكل مقاومة مضادات الميكروبات مصدر قلق متزايد في جميع أنحاء العالم. طلاب الطب هم واصفون ومشرفون محتملون لمضادات الميكروبات بعد التخرج كأطباء. كان الهدف من هذه الدراسة هو تقييم المعرفة المتعلقة باستخدام المضادات الحيوية ومقاومتها بين طلاب الطب في السنوات السريرية في جامعة العلوم والتكنولوجيا الأردنية. الدراسات المماثلة نادرة، ولا توجد أي منها فيما يتعلق بالوضع في الأردن. من المرجح أن يؤثر تعليم الطلاب الجامعيين على ممارساتهم. يعد تقييم الوعي أمراً بالغ الأهمية في الجهد العام لمواجهة انتشار مقاومة المضادات الحيوية.

منهجية الدراسة : تم إجراء دراسة مقطعية على عينة مكونة من طلاب الطب في السنوات الرابعة والخامسة والسادسة من جامعة العلوم والتكنولوجيا الأردنية. بلغ عدد الطلاب المشاركين 587 طالباً. أجريت الدراسة في الفترة من الأول من نوفمبر 2022 إلى الأول من فبراير 2023. وكان الاستطلاع مجهول الهوية وأجري ذاتياً. تم جمع البيانات من استبيان المسح على الإنترنت. تم تحليل البيانات في كاي مربع كاي 14.0. تم استخدام الإحصاء الوصفي لتوليد التكرارات والنسب المئوية والنسب. حيثما كان ذلك مناسباً، تم استخدام لتحديد أي دلالة إحصائية. **النتائج:** استجاب ما مجموعه 587 طالباً؛ كان 42.9% من الذكور (العند = 252) و 57.0% من الإناث (العند = 335)، وكان معدل الاستجابة 94%. وقد رغب سبعة وثمانون في المائة منهم في الحصول على مزيد من التعليم حول استخدام المضادات الحيوية ومقاومتها. أغلبية 119 (64.7%) من المشاركين لديهم معرفة جيدة باستخدام المضادات الحيوية ومقاومتها، ومع ذلك، أجاب 39% بشكل غير صحيح أن البكتيريا تسبب نزلات البرد. فقط 103 (56.0%) منهم لديهم ممارسة إيجابية لاستخدام المضادات الحيوية. في حين أن 8.2% من المشاركين يستشيرون الطبيب دائماً قبل البدء بالمضاد الحيوي. 37.2% منهم لم يتخلصوا أبداً من بقايا أدويتهم. ارتبطت المعرفة بفروق ذات دلالة إحصائية حسب سنة دراسة الطب ($P < 0.0001$).

الاستنتاجات: توفر هذه الدراسة أول بيانات انتشار حول استخدام المضادات الحيوية ومعرفة المضادات الحيوية ومقاومتها للمضادات الحيوية بين طلاب المرحلة الجامعية الطبية فقط. تشير نتائج الدراسة إلى أن التعليم الطبي الحالي قد أثر بشكل مناسب على جودة استخدام المضادات الحيوية بين طلاب الطب في الأردن.

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Received: April 29, 2024

Accepted: November 11, 2024

DOI:

<https://doi.org/10.35516/jmj.v59i5.2604>

الكلمات الدالة: استخدام المضادات الحيوية ، مقاومة المضادات الحيوية، الطلاب الطب، المعرفة، الممارسة، الأردن