

ORIGINAL ARTICLE

Awareness and Knowledge of Isotretinoin Use and Side Effects among Jordanians: A Cross-Sectional Study

Rand Murshidi^{1†}, Jehad Feras AlSamhori^{2†}, Abdel Rahman Feras AlSamhori², Ahmad Feras AlSamhori², Rama Ammouri³, Miramar Haddad², Ruba Orabi², Ayham Mohammad Hussein⁴, Heba Lala¹, Mahmoud Abdallat⁵

¹Department of Dermatology, School of Medicine, The University of Jordan, Amman, Jordan

² Faculty of Medicine, The University of Jordan, Amman, Jordan.

³ Jordan Hospital, Amman, Jordan.

⁴ Faculty of Medicine, Al- Balqa' Applied University, Salt, Jordan

⁵ Department of Neurosurgery, The University of Jordan, Amman, Jordan

†: These authors contributed equally to this work

***Corresponding author:**

r.murshidi@ju.edu.jo

Received: March 28, 2025

Accepted: April 22, 2025

DOI:

<https://doi.org/10.35516/jmj.v60i2.4126>

Abstract

Background: Isotretinoin, a potent treatment for severe acne, necessitates careful monitoring due to its potential side effects, including teratogenicity, hyperlipidemia, and hepatotoxicity. Despite its widespread use, patient understanding of its risks and proper usage varies considerably.

Objective: This study sought to evaluate the knowledge of Isotretinoin and its associated side effects among Jordanians, identifying critical gaps in awareness and factors influencing comprehension.

Methods: We conducted a cross-sectional study using bilingual questionnaires (Arabic and English) distributed both online and in print. Data analysis focused on assessing overall awareness and examining the influence of demographic and socioeconomic factors on isotretinoin knowledge.

Results: The study encompassed 1,669 participants. Only 611 respondents (36.6%) were aware of isotretinoin treatment, while the remaining 1,058 (63.4%) were not. Among those aware, the mean knowledge score was 17.80 ± 3.39 out of 23. Female participants exhibited greater knowledge compared to males, while those with previous dermatological consultations or healthcare employment demonstrated significantly higher awareness. Notably, misconceptions persisted, particularly regarding isotretinoin's duration of use and age restrictions. Doctors and friends emerged as the primary information sources, underscoring the importance of both medical professionals and social networks in patient education.

Conclusion: Despite a general understanding of isotretinoin, specific knowledge gaps persist, emphasizing the need for targeted educational strategies. Improving public awareness through increased pharmacist involvement and structured counseling could enhance the safe and informed use of isotretinoin in Jordan.

Keywords: Acne, Isotretinoin, awareness, Knowledge

INTRODUCTION

Isotretinoin, a derivative of vitamin A, was first approved by the United States Food and Drug Administration (US FDA) in 1982 and is considered the first-line therapy for severe or moderate acne that is unresponsive to other medications (1,2). It belongs to the class of retinoids, and although its efficacy is well-established, its exact mechanism of action remains unclear. Isotretinoin is believed to induce apoptosis in sebaceous glands, leading to a reduction in gland size and sebum production, thereby affecting lipid production in the skin and potentially other systems (1,3). Isotretinoin is highly cost-effective compared to other treatments for severe acne. Common side effects range from mild to potentially life-threatening, including dry mouth, nose, and eyes, decreased night vision, dry skin, muscle and joint pains, increased susceptibility to sunburn, fatigue, and headaches. The most significant concern is teratogenicity (1), with dry skin and lips being the most reported side effects affecting 100% of patients (4). Oral isotretinoin has been shown to affect serum lipids, causing a significant increase in blood triglyceride and cholesterol levels, as well as a risk to bone health, leading to a reduction in bone mineral density (4).

Clinical pharmacists play a crucial role in patient education and follow-up (5), as well as in detecting, reporting, and preventing medication errors in various hospital settings (6). However, a study conducted in Saudi Arabia revealed that pharmacists may not have sufficient awareness of the proper use and risks of oral isotretinoin (7). Similarly, patient knowledge about isotretinoin varies significantly. Studies from neighboring countries such as Saudi Arabia have demonstrated that many patients are unaware of key side effects, such as hyperlipidemia,

elevated liver enzyme levels, the need to avoid blood donation, and the requirement to discontinue use before pregnancy (2,8). While some data exists for the Jordanian population, comprehensive national studies remain limited.

Given the presence of similar research in neighboring countries and the unique cultural and healthcare dynamics in Jordan, studying the Jordanian context provides valuable, localized data that can inform public health initiatives and clinical practice. Therefore, our study aims to conduct a cross-sectional investigation to assess the knowledge of isotretinoin and its side effects in Jordan. This study seeks to evaluate the overall awareness of isotretinoin and the extent of knowledge among the population regarding its use and associated risks

METHODS

Study Design and sample size

This cross-sectional study aimed to assess the knowledge of the Jordanian population regarding the use of isotretinoin. Data collection was conducted over one month, from July 13 to August 13. Jordanian participants of both genders and from various governorates were recruited. Individuals who were illiterate, under the age of 18, or who did not provide consent to complete the questionnaire were excluded from the study.

To ensure accessibility, a self-administered survey was distributed in both Arabic and English, available in both online and print formats. The questionnaire was initially developed in English and then translated into Arabic by four native Arabic speakers proficient in English. An impartial expert reviewed the questionnaire to eliminate double-barreled, unclear, or misleading questions.

Participants were recruited using a mixed-

method approach to enhance the representativeness of the sample. Online recruitment was conducted through widely used public social media forums, including university and student groups, targeting a broad demographic across different regions. Offline recruitment took place in various public facilities such as university libraries, laboratories, and community centers in different governorates, ensuring the inclusion of individuals with limited internet access. Although this method may introduce some degree of selection bias, efforts were made to reach a diverse population across urban and rural settings, different educational backgrounds, and age groups. Additionally, participation was voluntary and anonymous to encourage honest responses.

The estimated sample size was calculated using GPower 3.1 and EpiInfo. At a power of 80%, with a margin of error of 5% and an effect size of 10%, a minimum sample of 1,091 participants was required to detect statistically significant differences using the Chi-square test.

Data collection instrument

The survey consisted of three domains containing a total of 38 questions. The first domain focused on sociodemographic characteristics, including age, residence, employment status, and income, as well as participants' general familiarity with isotretinoin. As this domain consisted primarily of factual or categorical variables, internal consistency was not assessed.

The second domain targeted participants who reported awareness of isotretinoin. It included questions about prior use of the treatment, willingness to recommend it to others, and the source of their initial information. This domain primarily contained descriptive and behavioral questions; therefore, reliability metrics such

as Cronbach's alpha were not calculated.

The third domain evaluated participants' knowledge of isotretinoin therapy and its associated side effects. This section included 23 knowledge-based questions, with each correct response assigned a score of one, yielding a total possible score of 23. Higher scores indicated greater knowledge. The internal consistency reliability of this domain was assessed using Cronbach's alpha, which demonstrated good reliability (Cronbach's alpha = 0.795), indicating acceptable internal consistency for the knowledge-based items. The questionnaire was adapted from previously validated tools used by Basheikh et al. and Jarab et al. (2,9). A pilot test involving more than 23 participants was conducted to evaluate readability, understandability, content validity, and reliability.

Statistical analysis

The information was taken from Google Forms and converted to an Excel spreadsheet before being entered into the Statistical Package for Social Sciences (SPSS) version 26. Descriptive analysis was used to display categorical variables as percentages and frequencies while presenting numerical variables as a mean and standard deviation to evaluate the data quantitatively. Normality was tested using the Shapiro–Wilk test. The student's t-test and ANOVA tests were conducted to assess potential differences in means among variables.

Both univariate and multivariate binary logistic regression analyses were performed to identify factors associated with isotretinoin awareness. Variables that showed statistical significance ($p < 0.05$) in the univariate analysis were included in the multivariate model to control for potential confounding effects. Further, univariate general linear regression analyses were conducted to

identify factors influencing higher knowledge scores. The results were reported as unstandardized beta coefficients (β) with 95% confidence intervals (CI). Subsequently, multivariate general linear regression analyses were performed to control for potential confounding factors and to assess independent predictors of higher knowledge scores. Variables that were significant in the univariate analysis ($p < 0.05$) were included in the multivariate model. A p-value of less than 0.05 was considered statistically significant.

Ethical considerations

This study was approved by the University of Jordan Institutional Review Board (No. 10/2023/17423) and will follow the institutional and/or national research committee's ethical standards and the principles of the World Medical Association's Declaration of Helsinki. Informed consent was obtained from all

participants prior to starting the questionnaire completion process. The consent form included the participants' rights to anonymity, confidentiality of their data, right to leave the study, and reassurance that their participation is completely voluntary, is not associated with any kind of short-term benefit or rewards and does not affect the quality of their received care (if applicable).

RESULTS

Demographics

A total of 1,669 participants completed the questionnaire, with a mean age of 27.79 ± 11.91 (\pm SD). Among the respondents, 1,254 (75.1%) were female, and the remaining 415 (24.9%) were male. Only 611 respondents (36.6%) were aware of isotretinoin treatment, while the remaining 1,058 (63.4%) were not. **Table 1** shows the frequency of included participants characteristics.

Table 1. Binary logistic regression for predicting awareness about isotretinoin treatment. (n = 1669)

	Aware about isotretinoin treatment		Overall (%)	Univariate analysis		Multivariate analysis	
	Yes (n=611)	No (n=1058)		Exp(B) (95% CI for EXP(B))	P – value	Exp(B) (95% CI for EXP(B))	P – value
Age (mean \pm SD) ^A	25.28 \pm 8.99	29.24 \pm 13.09	27.79 \pm 11.91	0.969 (0.960 – 0.978)	< 0.001	0.975 (0.958 – 0.993)	0.006
Gender ^B							
Male	117 (7.0%)	298 (17.9%)	415 (24.9%)	0.604 (0.474 – 0.769)	< 0.001	0.751 (0.566 – 0.995)	0.046
Female	494 (29.6%)	760 (45.5%)	1254 (75.1%)	Reference			
Social status ^B							
Single	477 (28.6%)	689 (41.3%)	1166 (69.9%)	1.906 (1.515 – 2.398)	< 0.001	1.157 (0.761 – 1.759)	0.494
Married, divorced, widow	134 (8.0%)	369 (22.1%)	503 (30.1%)	Reference			
Education levels ^B							
High school or lower	72 (4.3%)	253 (15.2%)	325 (19.5%)	0.425 (0.320 – 0.564)	< 0.001	0.535 (0.388 – 0.737)	< 0.001
Bachelor or higher	539 (32.3%)	805 (48.2%)	1344 (80.5%)	Reference			
Monthly income ^B							
Less than 750 JDs	435 (26.1%)	811 (48.6%)	1246 (74.7%)	0.753 (0.601 – 0.943)	0.014	0.904 (0.691 – 1.181)	0.458
More than 750 JDs	176 (10.5%)	247 (14.8%)	423 (25.3%)	Reference			
Governorate ^B							
Northern	131 (7.8%)	220 (13.2%)	351 (21.0%)	1.074 (0.717 – 1.610)	0.729		
Central	429 (25.7%)	746 (44.7%)	1175 (70.4%)	1.037 (0.722 – 1.490)	0.843		
Southern	51 (3.1%)	92 (5.5%)	143 (8.6%)	Reference			
Employment ^B							
Yes	149 (8.9%)	327 (19.6%)	476 (28.5%)	0.721 (0.575 – 0.904)	0.005	0.721 (0.520 – 0.999)	0.049
No	462 (27.7%)	731 (43.8%)	1193 (71.5%)	Reference			
Insurance ^B							

	Aware about isotretinoin treatment			Univariate analysis		Multivariate analysis	
Insured	432 (25.9%)	669 (40.1%)	1101 (66.0%)	1.403 (1.133 – 1.739)	0.002	1.171 (0.908 – 1.510)	0.224
Not insured	179 (10.7%)	389 (23.3%)	568 (34.0%)	Reference			
Working in health-care sector^B							
Yes	184 (11.0%)	119 (7.1%)	303 (18.2%)	3.4 (2.629 – 4.398)	< 0.001	3.052 (2.250 – 4.139)	<0.001
No	427 (25.6%)	939 (56.3%)	1366 (81.8%)	Reference			
A family member working in the healthcare sector^B							
Yes	401 (24.0%)	513 (30.7%)	914 (54.8%)	2.029 (1.651 – 2.493)	< 0.001	1.437 (1.135 – 1.821)	0.003
No	210 (12.6%)	545 (32.7%)	755 (45.2%)	Reference			
Previous dermatological consultation^B							
Yes	470 (28.2%)	397 (23.8%)	867 (51.9%)	5.550 (4.429 – 6.955)	< 0.001	5.219 (4.110 – 6.626)	<0.001
No	141 (8.4%)	661 (39.6%)	802 (48.1%)				

Cox & Snell R²: 0.218, Nagelkerke R²: 0.298, Hosmer and Lemeshow Test (p > 0.05).

JDs: Jordanian dinar, OD: Odds ratio, SD: standard deviation.

A: Student's t-test, B: Chi-square.

Once comparing the factors influencing the awareness attitude of participants, we found that

Univariate logistic analysis showed that increasing in age [Exp(B) = 0.969 (95% CI: 0.960 – 0.978); p < 0.001] being male [Exp(B) = 0.604 (95% CI: 0.474 – 0.769); p < 0.001], having a high school level of education [Exp(B) = 0.425 (95% CI: 0.320 – 0.564); p < 0.001], a monthly income less than 750 JDs [Exp(B) = 0.753 (95% CI: 0.601 – 0.943); p = 0.014], and being employed [Exp(B) = 0.721 (95% CI: 0.575 – 0.904); p = 0.005] were negatively associated with awareness of isotretinoin treatment. Meanwhile, participants who were single [Exp(B) = 1.906 (95% CI: 1.515 – 2.398); p < 0.001], had health insurance [Exp(B) = 1.403 (95% CI: 1.133 – 1.739); p = 0.002], worked in the health sector [Exp(B) = 3.400 (95% CI: 2.629 – 4.398); p < 0.001], had family members working in healthcare [Exp(B) = 2.029 (95% CI: 1.651 – 2.493); p < 0.001], or previously seeking dermatological consultation [Exp(B) = 5.550 (95% CI: 4.429 – 6.955); p < 0.001] were positively associated with awareness about isotretinoin treatment.

Multivariate logistic analysis confirmed that increasing in age [Exp(B) = 3.052 (95%

CI: 0.975 – 0.993); p = 0.006], being male [Exp(B) = 0.751 (95% CI: 0.566 – 0.995); p = 0.046], having a high school level of education [Exp(B) = 0.535 (95% CI: 0.388 – 0.737); p < 0.001], and being employed [Exp(B) = 0.721 (95% CI: 0.520 – 0.999); p < 0.001] remained negatively associated with isotretinoin treatment awareness. Meanwhile, working in healthcare [Exp(B) = 3.052 (95% CI: 2.250 – 4.139); p < 0.001], having family members working in healthcare [Exp(B) = 1.437 (95% CI: 1.135 – 1.821); p = 0.003], and previously seeking dermatological consultation [Exp(B) = 5.219 (95% CI: 4.110 – 6.626); p < 0.001] were positively associated with awareness. **Table 1** shows univariate and multivariate logistic regressions.

Isotretinoin treatment history

Two hundred and fifty-six participants had used isotretinoin before (41.9%). Among them, 217 respondents (84.8%) agreed that they would recommend its usage to their friends or relatives. Finally, when asked about the sources from which they heard about it, doctors and friends were the most reported sources, accounting for 218 (35.7%) and 177 (29.0%), respectively. **Table 2** summarizes the isotretinoin treatment history.

Table2. Isotretinoin treatment history. (n=611)

Item	Frequency (%)
Previous usage of isotretinoin treatment	
Yes	256 (41.9)
No	355 (58.1)
If there was previous usage, would it be recommended for friends, family members, and neighbors	
Yes	217 (84.8)
No	39 (15.2)
First heard about isotretinoin treatment from	
Doctors	218 (35.7)
Relatives	133 (21.8)
Internet	83 (13.5)
Friends	177 (29.0)

Knowledge score among who were aware of isotretinoin.

The mean knowledge score was 17.80 ± 3.39 (SD) out of a possible 23 points. Using the standard deviation to define cut-off points, we established the following ranges:

- Poor: $< (\text{Mean} - 1 \text{ SD}) = < 14.41$
- Good: $(\text{Mean} - 1 \text{ SD})$ to $(\text{Mean} + 1 \text{ SD}) = 14.41$ to 21.19
- Excellent: $> (\text{Mean} + 1 \text{ SD}) = > 21.19$

The overall mean score falls within the "good" range. Respondents demonstrated excellent awareness on several aspects, with correct answers exceeding the upper cut-off ($21.19/23$ or 92.13%) for topics such as taking isotretinoin with ample water (96.2%), contraindications during pregnancy (94.3%),

and awareness of dryness as a side effect (93.8%). Good awareness (between 62.65% and 92.13% correct) was observed for most other topics, including the necessity of laboratory monitoring (92.0%), the requirement of a prescription (91.5%), and the recommendation to use sunscreen (91.3%). However, awareness was poor (below 62.65% correct) regarding long-term isotretinoin use beyond six months (33.1%) and its use for individuals under 18 years old (31.3%). **Table 3** summarizes the percentage of correct answers for each statement, with items ranked by percentage of correct answers, highlighting the most and least understood topics.

Table3.knowledge about Isotretinoin. (n=611)

Category	Knowledge about Isotretinoin (out of 23)	Frequency of correct answer (%)
Excellent		(>92.13%)
	Isotretinoin should be taken with ample water to prevent dehydration.	588 (96.2)
	Isotretinoin usage is contraindicated during pregnancy.	576 (94.3)
	Awareness about isotretinoin's potential side effect of causing dryness is crucial.	573 (93.8)
Good		(62.65% - 92.13%)
	Monitoring through laboratory tests is necessary during isotretinoin use.	562 (92.0)
	Isotretinoin use without a prescription is not permissible.	559 (91.5)
	Use of isotretinoin is recommended alongside sunscreen.	558 (91.3)

Category	Knowledge about Isotretinoin (out of 23)	Frequency of correct answer (%)
	Breastfeeding is not recommended during isotretinoin treatment.	550 (90.0)
	Simple intensity exercises can be performed during isotretinoin treatment.	534 (87.4)
	Isotretinoin may impact lipid levels in the blood.	518 (84.8)
	Treatment with isotretinoin might elevate liver enzymes.	500 (81.8)
	Blood donation is prohibited while undergoing isotretinoin treatment.	498 (81.5)
	Isotretinoin can potentially cause birth defects as a side effect.	497 (81.3)
	Acne may reoccur after completing isotretinoin treatment.	489 (80.0)
	Isotretinoin could potentially cause depression as a side effect.	488 (79.9)
	Isotretinoin might trigger eye inflammation as a side effect.	462 (75.6)
	Isotretinoin may induce headaches as a side effect.	459 (75.1)
	Isotretinoin could cause joint and back pain as a side effect.	434 (71.0)
	Isotretinoin might lead to nosebleeds as a side effect.	422 (69.1)
	Intense exercises should be avoided during isotretinoin treatment.	420 (68.7)
	Isotretinoin may have an impact on vision.	405 (66.3)
	It is advisable to take isotretinoin with a substantial meal.	390 (63.8)
Poor		(<62.65%)
	Isotretinoin can be used continuously for over 6 months.	202 (33.1)
	Isotretinoin can be used for individuals under 18 years old.	191 (31.3)
	Overall (%) of correct answers	77.38

Comparison of mean knowledge score

Significant differences were observed. Females, individuals who were single, unemployed, working in the health-care sector, having a family member in the health-care sector, and those with previous usage of

isotretinoin showed significantly higher mean scores (p-values < 0.001, 0.009, 0.016, 0.003, 0.003, and < 0.001, respectively). **Table4** summarizes the comparison across various variables.

Table4. Comparing the mean score across the demographic characteristics and past isotretinoin experience.

Item	Mean ± SD	P – value
Gender^A		< 0.001
Male	16.44 ± 3.55	
Female	18.12 ± 3.28	
Social status^A		0.009
Single	18.01 ± 3.22	
Married, divorced, widow	17.03 ± 3.86	
Education levels^A		0.094
High school or lower	16.92 ± 4.06	
Bachelor or higher	17.92 ± 3.28	

Item	Mean \pm SD	P – value
Monthly income ^A		0.530
Less than 750 JDs	17.83 \pm 3.41	
More than 750 JDs	17.73 \pm 3.36	
Governorate ^B		0.702
Northern	17.70 \pm 3.55	
Central	17.79 \pm 3.35	
Southern	18.10 \pm 3.35	
Employment ^A		0.016
Yes	17.14 \pm 3.78	
No	18.01 \pm 3.23	
Insurance ^A		0.177
Insured	17.98 \pm 3.14	
Not insured	17.35 \pm 3.90	
Working on health-care sector ^A		0.003
Yes	18.29 \pm 3.39	
No	17.59 \pm 3.78	
Family member working on health-care sector ^A		0.003
Yes	18.06 \pm 3.34	
No	17.30 \pm 3.44	
Previous usage of isotretinoin treatment ^A		<0.001
Yes	18.42 \pm 3.25	
No	17.35 \pm 3.43	
If there was previous usage, would it be recommended for friends, family members, and neighbors ^A		0.620
Yes	18.35 \pm 3.32	
No	18.77 \pm 2.83	
First heard about isotretinoin treatment from ^B		0.092
Doctors	18.20 \pm 3.00	
Relatives	17.92 \pm 3.53	
Internet	17.14 \pm 4.00	
Friends	17.52 \pm 3.34	

A: Student's T test, B: ANOVA.

JDs: Jordanian dinar, SD: Standard deviation.

Factors influencing higher knowledge score

Univariate general linear regression analysis showed that increasing age [$\beta = -0.035$ (-0.065 – -0.005); $p = 0.023$], being male [$\beta = -1.675$ (-2.347 – -1.003); $p < 0.001$], having a high school level of education [$\beta = 1.000$ (-1.833 – -0.167); $p =$

0.019], and being employed [$\beta = -0.870$ (-1.494 – -0.246); $p = 0.006$] were significantly associated with lower knowledge scores. Meanwhile, participants who were single [$\beta = 0.985$ (0.338 – 1.632); $p = 0.004$], had health insurance [$\beta = 0.632$ (0.041 – 1.222); $p = 0.036$], worked in the healthcare sector [$\beta = 0.700$ (0.115 – 1.285); $p = 0.019$], had

family members working in healthcare [$\beta = 0.753$ (0.188 – 1.317); $p = 0.009$], had previously sought dermatological consultation [$\beta = 0.817$ (0.180 – 1.454); $p = 0.012$], or had previously used isotretinoin [$\beta = 1.066$ (0.526 – 1.606); $p < 0.001$] were associated with higher knowledge scores.

Multivariate analysis confirmed that being male [$\beta = -1.648$ (-2.320 – -0.976); $p < 0.001$], having a high school level of education [$\beta = -0.899$ (-1.692 – -0.087); $p = 0.030$], and being employed [$\beta = -1.014$ (-

1.754 – -0.275); $p = 0.007$] remained negative predictors of knowledge score. Meanwhile, having health insurance [$\beta = 0.772$ (0.196 – 1.348); $p = 0.009$], working in healthcare [$\beta = 0.711$ (0.104 – 1.319); $p = 0.022$], having family members working in healthcare [$\beta = 0.609$ (0.059 – 1.160); $p = 0.030$] and prior isotretinoin use [$\beta = 0.979$ (0.397 – 1.562); $p = 0.001$] remained positive predictors of higher knowledge. **Table 5** shows univariate and multivariate analysis of higher knowledge score.

Table 5. Factors influencing higher knowledge score among participants who were aware about Isotretinoin treatment.

Variables	Univariate analysis		Multivariate analysis	
	β (95% CI)	P – value	β (95% CI)	P – value
Age	-0.035 (-0.065 – -0.005)	0.023	0.015 (-0.032 – 0.061)	0.534
Gender				
Male	-1.675 (-2.347 – -1.003)	< 0.001	-1.648 (-2.320 – -0.976)	< 0.001
Female	Reference			
Social status				
Single	0.985 (0.338 – 1.632)	0.003	0.897 (-0.121 – 1.915)	0.084
Married, divorced, widow	Reference			
Education levels				
High school or lower	-1.000 (-1.833 – -0.167)	0.019	-0.899 (-1.692 – -0.087)	0.030
Bachelor or higher	Reference			
Monthly income				
Less than 750 JDs	0.100 (-0.495 – 0.696)	0.741		
More than 750 JDs	Reference			
Governorate				
Northern	-0.396 (-1.497 – 0.705)	0.480		
Central	-0.305 (-1.293 – 0.682)	0.544		
Southern	Reference			
Employment				
Yes	-0.870 (-1.494 – -0.246)	0.006	-1.014 (-1.754 – -0.275)	0.007
No	Reference			
Insurance				

Variables	Univariate analysis		Multivariate analysis	
	β (95% CI)	P – value	β (95% CI)	P – value
Insured	0.632 (0.041 – 1.222)	0.036	0.772 (0.196 – 1.348)	0.009
Not insured	Reference			
Working in the health-care sector				
Yes	0.700 (0.115 – 1.285)	0.019	0.711 (0.104 – 1.319)	0.022
No	Reference			
Family member working in the health-care sector				
Yes	0.753 (0.188 – 1.317)	0.009	0.609 (0.059 – 1.160)	0.030
No	Reference			
Previous dermatological consultation				
Yes	0.817 (0.180 – 1.454)	0.012	0.335 (-0.341 – 1.010)	0.331
No	Reference			
Previous usage of isotretinoin treatment				
Yes	1.066 (0.526 – 1.606)	< 0.001	0.979 (0.397 – 1.562)	0.001
No	Reference			
If there was previous usage, would it be recommended for friends, family members, and neighbors				
Yes	-0.414 (-1.527 – 0.698)	0.464		
No	Reference			

[$R^2 = 0.122$, adjusted $R^2 = 0.108$]

DISCUSSION

This study aimed to investigate the knowledge of isotretinoin and its associated side effects among the population in Jordan. The research assessed the overall awareness of isotretinoin and the depth of understanding regarding its utilization and potential adverse effects.

Our findings indicate that male respondents exhibited lower awareness of isotretinoin compared to female respondents, corroborating previous studies in the Middle East that have highlighted gender-based disparities in isotretinoin awareness (10,11). Additionally, respondents who lacked awareness of the treatment tended to be older

than those who were aware. Age-related disparities have been observed across various international contexts, suggesting the potential benefits of tailored educational interventions targeting different age groups to enhance engagement with healthcare treatments (2). Furthermore, single respondents, individuals with insurance coverage, and those with a family member employed in the healthcare sector were significantly more aware of the treatment. These findings align with existing literature emphasizing the influence of socio-economic status on health-related knowledge and treatment accessibility (12,13). Additionally, respondents working in the healthcare sector and those with previous dermatological consultations were three and five times more likely to be aware of the treatment, respectively. This association between employment in the healthcare sector and heightened awareness resonates with findings from diverse cultural settings, highlighting the universal impact of professional exposure on knowledge acquisition (1). Similarly, the positive correlation between prior dermatological consultations and increased awareness aligns with global evidence underscoring the role of medical interactions in patient education (14,15).

Two hundred and fifty-six participants reported previous use of isotretinoin (41.9%), consistent with international studies highlighting the widespread use of isotretinoin in the treatment of severe acne globally (16). Among these participants, 217 (84.8%) indicated they would recommend its usage to friends or relatives. This high rate of recommendation is in line with the reported efficacy of isotretinoin in treating severe acne, which has been associated with significant improvements and patient

satisfaction in various international studies (17). Regarding sources of information, doctors and friends were the most reported sources, accounting for 218 (35.7%) and 177 (29.0%) responses, respectively. This trend reflects findings from regional studies in the Middle East, where healthcare professionals, particularly dermatologists, and personal networks are primary sources of information for patients considering or undergoing isotretinoin treatment (18). The reliance on recommendations from friends may suggest the influence of anecdotal experiences or word-of-mouth in decision-making regarding isotretinoin usage. While professional medical advice remains paramount, the impact of peer recommendations on treatment decisions underscores the need for comprehensive patient education strategies.

The study's findings discussed the level of knowledge regarding isotretinoin among the surveyed population in Jordan. The mean knowledge score of 17.80 ± 3.39 (\pm SD) out of 23 suggests a generally good understanding of isotretinoin-related information among the respondents.

The study identified significant awareness among participants regarding crucial aspects of isotretinoin usage, consistent with existing literature in the Middle East region. For instance, a high percentage of respondents were aware of the importance of ample water intake to prevent dehydration while using isotretinoin, a finding supported by prior studies in the region (10,19). Similarly, respondents showed awareness of isotretinoin's contraindication during pregnancy and its potential side effects, such as dryness, in line with findings from neighboring countries (20). However, the study also revealed areas of misconceptions or inadequate knowledge among respondents, particularly regarding the

duration of isotretinoin usage and its suitability for individuals under 18 years old. The percentage of correct responses regarding the permissibility of continuous isotretinoin use for over 6 months and its usage in individuals under 18 years old was notably lower. The overall percentage of correct answers (77.38%) indicates a good level of knowledge but also underscores the need for targeted educational interventions to address specific misconceptions or gaps in understanding among the surveyed population. It is important to note that discrepancies might exist among different regions, as some areas might exhibit higher awareness or different patterns of misconceptions regarding isotretinoin's duration or age restrictions due to variations in healthcare practices and educational campaigns (21).

Strengths and limitations

The study employed a robust methodology to assess the knowledge of the Jordanian population regarding the usage of isotretinoin, with a large sample size that supports the generalizability of the findings. Data collection was thorough, utilizing both online and print formats in Arabic and English to ensure inclusion of a diverse population. However, the study has several limitations. First, the recruitment strategy, which relied on online platforms and public facilities, may have introduced sampling bias by disproportionately including individuals with internet access or those affiliated with academic institutions. Second, the use of self-reported data is subject to social desirability bias, where participants may have overreported desirable behaviors or knowledge to align with perceived expectations. Third, as a cross-sectional study, it captures information at a single point in time, limiting our ability to infer causality

or assess changes in knowledge or behavior over time. Future longitudinal or interventional studies would be beneficial to overcome these limitations and better understand the impact of educational interventions on isotretinoin knowledge.

CONCLUSION

In conclusion, while the surveyed population in Jordan demonstrates commendable awareness of certain aspects related to isotretinoin use, there remain areas of insufficient understanding. Addressing these gaps through targeted educational initiatives could enhance overall knowledge and ensure safer and more informed use of isotretinoin.

Submission statement

This work has not been submitted for publication elsewhere and all the authors listed have approved the manuscript enclosed.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authors' contributions

Rand Murshidi: Conceptualization, Investigation, Writing - Original Draft, Project administration, Writing - Review & Editing, and Supervision, **Jehad Feras ALSamhori:**

Conceptualization, Investigations, Writing - Original Draft, Writing - Review & Editing, and Formal analysis, **Abdel Rahman Feras ALSamhori:**

Investigation, and Writing - Original Draft, **Ahmad Feras ALSamhori:**

Investigation, and Writing - Original Draft, **Rama Ammouri:**

Investigation, and Writing - Original Draft, **Miramar Haddad:**

Investigation, and Writing - Original Draft, **Ruba Orabi:** Investigation, and Writing - Original Draft,

Ayham Muhammad Hussein: Investigation, and Writing - Original Draft, **Heba Lala:** Investigation, and Writing - Review & Editing, **Mahmoud Abdallat:** Writing - Review & Editing, Conceptualization, Project administration, and Supervision.

Conflict of interest

The authors declare that they do not have conflicts of interest relevant to this review.

Acknowledgement

We would like to acknowledge Ibrahim Awad Almuhausen, Lara Mohammad Abo Zenha, Layan Ayman Al-shayeb, Leena Ja'far

AlMahrook, Rama Abdallah Alsayyed, Raneem Bassam Esaid, Rahaf Moayad Alrao'sh, Rasha Abdelelah Alnsour, Sondos Mazen Moqbel, Yara Kamal Almomani, and Zeena Basil Okoor.

List of abbreviations

JDs: Jordanian dinar

AOD: Adjusted Odds ratio

SD: standard deviation

US FDA: United States Food and Drug Administration

Consent for publication:

Not applicable.

REFERENCES

1. Alabadallah RY, Hijazi BM, Altawalbeh SM, Oqal M, Almomani BA. Clinical pharmacist role in improving the knowledge and outcomes in patients using isotretinoin: A randomized, controlled study. *Heliyon*. 2023;9(9):e20102.
2. Jarab AS, Al-Azzam S, Almutairi S, Mukattash TL. Patients' Knowledge and Information Needs about Isotretinoin Therapy Use in Jordan. *Int J Clin Pract*. 2022;2022:1-6.
3. Elshafie M, Srour A, el-Ansarey H, Abdel-kader M, Kabbash I, Mashaly M. Dermatologists' Knowledge and Attitude Toward Isotretinoin Ocular Side Effects in Egypt. *Clin Cosmet Investig Dermatol*. 2021;14:1295-301.
4. Malebari AM, Bakhsh HT, Musairi RM, Alghamdi JO, Alhaddad AA. An Assessment of the Knowledge of Oral Isotretinoin (Roaccutane) Treatment Among Pharmacy Students in Saudi Arabia. *Cureus*. 2023;15(6):e40388.
5. Keijsers CJPW, Brouwers JRBJ, de Wildt DJ, Custers EJFM, ten Cate OTJ, Hazen ACM, et al. A comparison of medical and pharmacy students' knowledge and skills of pharmacology and pharmacotherapy. *Br J Clin Pharmacol*. 2014;78(4):781-8.
6. Mostafa LS, Sabri NA, El-Anwar AM, Shaheen SM. Evaluation of pharmacist-led educational interventions to reduce medication errors in emergency hospitals: a new insight into patient care. *J Public Health (Oxf)*. 2020;42(1):169-74.
7. Alrwisan AA, Alshammari TM, Tahir KW, Aleissa FM, Aljadhey HS. Community pharmacists' knowledge of isotretinoin safety. *Saudi Med J*. 2014;35(1):81-4.
8. Younis NS, Al-Harbi NY. Public Understanding and Awareness of Isotretinoin Use and Safety in Al Ahsa, Eastern Saudi Arabia. *Ther Innov Regul Sci*. 2019;53(5):618-22.
9. Basheikh A, Alattas A, Alshareef R, Bamahfouz A. Dermatologists' Knowledge and Attitudes Toward Dry Eye Disease, Refractive Surgery, and Contact Lenses When Prescribing Isotretinoin in Saudi Arabia. *Clin Ophthalmol*. 2020;14:4519-22.
10. Alghamdi WA, Alwesaibie HS, Albeshar MA, Alghamdi FK, Albaqshi AA. Knowledge, Attitude, and Practice Regarding the Use of Isotretinoin in Saudi Arabia. *Cureus*. 2023;15(12):e50123.
11. Bakheet KMA, Alghanemi RG, Alsiyoufi AM, Abduljabbar M, Hariri J. Females' Knowledge and Use of Isotretinoin (Roaccutane) in the Western Region of Saudi Arabia. *Cureus*. 2020;12(12):e12112.

12. Nutbeam D, Lloyd JE. Understanding and Responding to Health Literacy as a Social Determinant of Health. *Annu Rev Public Health*. 2021;42:159-73.
13. Stormacq C, Van Den Broucke S, Wosinski J. Does health literacy mediate the relationship between socioeconomic status and health disparities? Integrative review. *Health Promot Int*. 2019;34(5):e1-17.
14. Saqib A, Atif M, Ikram R, Riaz F, Abubakar M, Scahill S. Factors affecting patients' knowledge about dispensed medicines: A Qualitative study of healthcare professionals and patients in Pakistan. *PLoS One*. 2018;13(6):e0197482.
15. Zirwas MJ, Holder JL. Patient education strategies in dermatology: part 2: methods. *J Clin Aesthet Dermatol*. 2009;2(12):28-34.
16. Rademaker M. Isotretinoin: dose, duration and relapse. What does 30 years of usage tell us? *Australas J Dermatol*. 2013;54(3):157-62.
17. Layton A. The use of isotretinoin in acne. *Dermatoendocrinol*. 2009;1(3):162-9.
18. Tugrul Ayanoglu B, Demirdag HG, Yalici Armagan B, Bezirgan O. Perceptions about oral isotretinoin treatment. *Dermatol Ther*. 2019;32(3):e12873.
19. Abukhalil A, Yousef M, Ammar M, Jaghama W, Al-Shami N, Naseef H, et al. Practices, Efficacy, and Reported Side Effects Associated with Isotretinoin Treatment in Palestine. *Patient Prefer Adherence*. 2024;18:487-501.
20. Alshaalan ZM. Knowledge on the Use of Isotretinoin and Its Side Effects and Awareness towards Saudi FDA-Pregnancy Prevention Program among the Female Acne Patients: A Northern Saudi Study. *Medicina (Kaunas)*. 2022;58(11):1609.
21. Evaristo LSBF, Bagatin E. Use of oral isotretinoin to treat acne in the public system: a hospital-based retrospective cohort. *Sao Paulo Med J*. 2019;137(4):363-8.

الوعي والمعرفة باستخدام الإيزوتريتينوين وآثاره الجانبية بين الأردنيين: دراسة مقطعية

رند المرشدي¹، جهاد فراس السمهوري²، عبد الرحمن فراس السمهوري²، أحمد فراس السمهوري²، زاما عموري³،
ميرامار حداد²، ربي عرابي²، أيهم محمد حسين⁴، هبة اللالا¹، محمود العبدالات⁵

الملخص

الخلفية: الإيزوتريتينوين هو علاج فعال لحب الشباب الشديد، ويتطلب مراقبة دقيقة نظراً لآثاره الجانبية المحتملة، بما في ذلك التشوهات الخلقية، وارتفاع الدهون في الدم، وسمية الكبد. وعلى الرغم من استخدامه الواسع، فإن فهم المرضى للمخاطر المرتبطة به وطريقة استخدامه بشكل صحيح يختلف بشكل كبير.

الهدف: هدفت هذه الدراسة إلى تقييم مستوى المعرفة حول الإيزوتريتينوين وآثاره الجانبية بين الأردنيين، وتحديد الفجوات في الوعي والعوامل المؤثرة على مستوى الفهم.

المنهجية: أجرينا دراسة مقطعية باستخدام استبيانات ثنائية اللغة (العربية والإنجليزية) تم توزيعها عبر الإنترنت وفي النسخ الورقية. وتركز تحليل البيانات على تقييم مستوى الوعي العام، وفحص تأثير العوامل الديموغرافية والاجتماعية والاقتصادية على المعرفة بالإيزوتريتينوين.

النتائج: شملت الدراسة 1669 مشاركاً. كان 611 مشاركاً فقط (36.6%) على دراية بعلاج الإيزوتريتينوين، بينما لم يكن لدى 1058 (63.4%) أي معرفة سابقة به. من بين أولئك الذين كانوا على دراية بالعلاج، بلغ متوسط درجة المعرفة 17.80 ± 3.39 من أصل 23. أظهرت المشاركات الإناث مستوى معرفة أعلى مقارنة بالذكور، كما أظهر الأشخاص الذين سبق لهم مراجعة أطباء الجلدية أو الذين يعملون في القطاع الصحي وعياً أعلى بشكل ملحوظ. ومن الجدير بالذكر أن بعض المفاهيم الخاطئة استمرت، خصوصاً فيما يتعلق بمدة استخدام الإيزوتريتينوين والفئات العمرية المسموح لها باستخدامه. كان الأطباء والأصدقاء المصدرين الأساسيين للمعلومات، مما يبرز أهمية كل من المهنيين الطبيين والشبكات الاجتماعية في تثقيف المرضى.

الاستنتاج: على الرغم من وجود فهم عام للإيزوتريتينوين، إلا أن هناك فجوات معرفية محددة تستدعي استراتيجيات تعليمية موجهة. ويمكن أن يساهم رفع مستوى الوعي العام من خلال تعزيز دور الصيدلة وتقديم استشارات منظمة في الاستخدام الآمن للإيزوتريتينوين في الأردن.

¹قسم الأمراض الجلدية، كلية الطب، الجامعة الأردنية، عمان، الأردن
²كلية الطب، الجامعة الأردنية، عمان، الأردن
³مستشفى الأردن، عمان، الأردن
⁴كلية الطب، جامعة البلقاء التطبيقية، السلط، الأردن
⁵قسم الأمراض الجلدية، كلية الطب، الجامعة الأردنية، عمان، الأردن
⁴قسم جراحة الأعصاب، الجامعة الأردنية، عمان، الأردن

Received: March 28, 2025

Accepted: April 22, 2025

DOI:

<https://doi.org/10.35516/jmj.v60i2.4126>

الكلمات الدالة: حب الشباب، إيزوتريتينوين، الوعي، المعرفة.