

(RESEARCH ARTICLE)



## Gabapentin use in the management of pruritus: Students survey

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International Journal of Scholarly Research in Biology and Pharmacy, 2024, 04(02), 026–031

Publication history: Received on 13 May 2024; revised on 22 June 2024; accepted on 25 June 2024

Article DOI: <https://doi.org/10.56781/ijrbp.2024.4.2.0221>

### Abstract

This study at Howard University College of Pharmacy assessed student knowledge and opinions on off-label gabapentin use for treating pruritus—a persistent, distressing itch where gabapentin is commonly prescribed despite lack of FDA approval. Focused on its primary use for seizures and neuropathic pain, concerns arise over potential misuse when extended to pruritus treatment. Surveying 39 students, findings indicated only 27% recognized its approval for seizures, and a mere 10.8% were aware of its use for hemodialysis-related pruritus. Furthermore, just 32.4% acknowledged its broad safety in dosing. Many students expressed caution against off-label use due to potential adverse effects outweighing benefits, with 40.5% hesitant about using non-approved medications for pruritus, and 37.8% advising against promoting its off-label application. Conversely, 48.6% supported the use of established treatments instead. The study highlights the need for targeted educational interventions to correct misconceptions and improve understanding of off-label drug use, though its findings are limited by reliance on self-reported data and a sample restricted to one institution—potentially impacting wider applicability. These results lay the groundwork for further research into off-label drug implications in varied medical settings.

**Keywords:** Gabapentin; Pruritus; Students; Survey; Pharmacy

### 1. Introduction

Gabapentin, an FDA-approved medication commonly used to treat seizures and neuropathic pain, is increasingly being misused by patients for pruritus without proper prescription. Pruritus, defined as an uncomfortable sensation prompting skin scratching, is associated with diverse etiologies including psychogenic, dermatologic, neuropathic, systemic, and paraneoplastic causes (Song J, et al. 208; Wong LS, Yen YT. 2022;12). Both acute and chronic pruritus significantly impact patients' quality of life, presenting therapeutic challenges for healthcare providers.

Pruritus involves complex pathophysiological processes—neurogenic, psychogenic, and inflammatory—that require multifaceted management strategies to address both the underlying etiologies and accompanying psychosocial factors (Garcovich S, et al. 2021).

Despite gabapentin's effectiveness for neuropathic pain, its application for pruritus raises concerns due to the limited clinical evidence and potential misuse (Garcovich S, et al. 2021; Yasaei R et al. 2020).

Healthcare professionals typically prioritize topical agents, antihistamines, and systemic corticosteroids as first-line treatments for pruritus, reserving gabapentin for severe neuropathic cases with caution. A pivotal study by Sreekantaswamy et al. in the Netherlands (Sreekantaswamy et al., 2021) found that only 38.3% of surveyed healthcare providers prescribed gabapentinoids for chronic pruritus, with 86.5% citing a lack of knowledge or experience with the

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medications as the primary reason for their hesitation. Two respondents even admitted unawareness of gabapentin or pregabalin’s applicability in treating CP.

This study also emphasizes the necessity of cautious gabapentinoid use, particularly among older adults who are more prone to side effects such as dizziness, somnolence, and potential opioid interactions due to diminished renal function. This demographic requires careful dosage adjustments and monitoring. Gabapentinoids, including gabapentin and pregabalin, have shown promise in managing chronic pruritus by binding to the  $\alpha 2\delta$  subunit of voltage-gated calcium channels, which might reduce the release of pruritogenic neuropeptides like substance P and CGRP.

Given these dynamics, there is a critical need for standardized, evidence-based treatment protocols for managing chronic pruritus in older adults. Healthcare organizations and providers are urged to adopt strict prescribing practices based on the latest research and guidelines to ensure patient safety and effective treatment outcomes. Enhanced provider education and awareness are essential to address the gaps in knowledge regarding the safe and effective use of gabapentinoids for pruritus, particularly in complex cases involving older adults.

## 2. Materials and methods

This study was conducted at Howard University College of Pharmacy, to investigate the knowledge and attitudes toward the off-label use of gabapentin for managing pruritus. A survey was administered to 39 participants as part of a drug information course. The survey comprised eight demographic questions and 10 knowledge and opinion questions structured on a 4-point Likert scale ranging from ‘strongly agree’ to ‘strongly disagree’. The demographic data collected included detailed variables such as age, gender, state of residence, prior work experience, annual income, and educational background, which were instrumental in analyzing how different backgrounds influence student views on gabapentin. Utilizing IBM SPSS software, the data was analyzed using frequency, crosstab analysis, and Pearson’s Chi-Square test to examine the relationship between the students’ responses and their demographic characteristics.

## 3. Results and discussion

The demographic data (Table 1) indicates that the majority of the HUCOP group respondents are young adults, with over 80% aged between 18-24 years, predominantly female, and from a variety of states, mostly outside of Washington, Maryland, and Virginia. Most respondents reported earnings below \$50,000 annually, with the largest segment earning less than \$10,000. The data reveals that prior work experience is common among the group, with nearly half having 1-3 years of experience, often in pharmacy-related fields. The educational background is notably high, with the majority holding a four-year degree before entering pharmacy school.

**Table 1** Respondents’ Opinions Based on Different Demographic Variables

Demographic Variable		N (%)
Gender	Males	16 (41.0%)
	Females	23 (59.0%)
State	Washington	2 (5.1%)
	Maryland	10 (25.6%)
	Virginia	7 (17.9%)
	Other States	20 (51.3%)
Age (Years)	18-24	33 (82.5%)
	25-34	0 (0%)
	>35	6 (17.5%)
Prior work experience		
Annual Income	Below \$10,000	12 (33.3%)
	\$10,000 – 19,999	2 (5.6%)

	\$20,000 – 29,999	5 (13.9%)
	\$30,000 – 39,999	7 (19.4%)
	\$40,000 – 49,999	4 (11.1%)
	Above \$49,999	6 (16.7%)
	No Response	3 (7.7%)
Work before joining HUCOP	Yes	34 (87.2%)
	No	5 (12.8%)
Years of work prior to joining the pharmacy program	< 1 Year	3 (8.6%)
	1 – 3 Years	19 (54.3%)
	4 – 5 Years	2 (5.7%)
	5 Years	11 (31.4%)
	No Response	4 (10.3%)
Work Type	Pharmacy or Health-related	8 (24.2%)
	Pharmacy Related	13 (39.4%)
	Pharmacy but Health-related	12 (36.4%)
	Not Answered	6 (15.4%)
Highest education level before joining pharmacy school	Some college	4 (10.5%)
	Two-year degree	3 (7.9%)
	Four-year degree	28 (73.7%)
	Professional Degree	3 (7.9%)
	Not answered	1 (2.6%)

Table 2 illustrates the responses from a survey examining knowledge about Gabapentin among the participants. The results show a mix of awareness and misconception. It is known that gabapentin is FDA-approved for managing partial seizures in patients aged three years and older. It can be used alone or with other antiepileptic drugs. It works by modulating voltage-gated calcium channels, reducing the release of excitatory neurotransmitters in the central nervous system. However, only about one-quarter (25%) of respondents agree that Gabapentin is approved for a seizure disorder, which matches the correct response, while 27 (75%) disagree, perhaps confusing its other approved use for neuropathic pain.

A similar pattern is seen regarding its safety profile. The safe dosage range of gabapentin widely varies. For example, for epilepsy in adults, the dose starts at 300 mg three times daily, but it could be safely used up to a maximum of 3600 mg per day. However, less than one-third (32%) agree with the statement about Gabapentin having a wide safety margin in dosage, and the majority disagree.

The statement about pruritus associated with hemodialysis causing severe itching and increasing the risk of death receives overwhelming disagreement, with over 90% against the notion, suggesting a consensus that pruritus does not directly increase mortality. It is known that pruritus, or severe itching, is a common complication among patients undergoing hemodialysis. Research indicates that up to 90% of patients on long-term hemodialysis experience pruritus at some point. This condition significantly impacts quality of life, causing discomfort, sleep disturbances, and impairment of daily activities.

Concerning the black box warning for Gabapentin, 82% of participants rightly agree that it is recommended to avoid overdose and use of opioids, understanding that the warning is broader in scope. The concurrent use of gabapentin and opioids raises significant safety concerns, notably increasing the risk of opioid-related death. Studies show that

individuals taking both medications have a 49% higher risk of opioid overdose death compared to those on opioids alone. Approximately 15-22% of U.S. adults prescribed opioids are also taking gabapentin, which can enhance the euphoric effects of opioids and lead to misuse. Both drugs cause respiratory depression, and their combined use can result in severe respiratory impairment, potentially fatal. Healthcare providers must closely monitor these patients, adjust dosages appropriately, and educate them on the risks and signs of overdose. Over eighty percent (82%) of survey participants also answered these questions correctly.

**Table 2** Responses to Knowledge-Based Survey Statements on Gabapentin

Survey statement	SA/A	DA/SDA	Correct response
Gabapentin is approved for a seizure disorder.	10	27	10 (27%)
Gabapentin has a safety and a wide dosage range profile	12	25	12 (32.4%)
Pruritus associated with haemodialysis can cause severe itching and increase the risk of death.	4	33	4 (10.8%)
The black box warning for gabapentin is to avoid overdose and use with opioids	9	28	28 (75.6%)
Gabapentin is also approved for use in neuropathic pain.	4	33	4 (10.8%)

Note: Abbreviations: SA=strongly agree; A=agree; DA=disagree; SDA=strongly disagree; There are two students missing in each question.

Table 3 outlines responses to a survey regarding opinions on the use of Gabapentin. Gabapentin does have recognized potential for abuse, particularly among populations with a history of substance abuse. It is not classified as a controlled substance in many places, but due to its potential for misuse, some regions have started to regulate it more strictly. The medication can produce psychoactive effects, such as euphoria, especially when used in higher than recommended doses or in combination with other substances like opioids. This has led to concerns about its use outside of approved medical indications. Therefore, the caution expressed in the statement is based on legitimate concerns related to the abuse potential of gabapentin.

The majority of respondents (58.9%) disagree with the statements suggesting skepticism or opposition to Gabapentin use. The other over 40% of respondents disagree with the belief against using Gabapentin due to its abuse potential outside approved indications, and an equal number disagree with the statement that hemodialysis-associated pruritus should not use non-approved drugs like Gabapentin when other treatments are available.

Similarly, more respondents disagree (51%) that the benefits of Gabapentin do not outweigh its adverse effects. While it's true that gabapentin has side effects and risks associated with its use, for many patients, the benefits of treatment with gabapentin outweigh these risks. Such evaluations need to be made by healthcare providers on a case-by-case basis.

A slight shift is seen in the statement about the ease of treating pruritus with drugs other than Gabapentin, where more respondents agree (56.4%) that non-FDA-approved uses of Gabapentin should be discouraged. However, the statement involves treating the underlying cause of red blood cell breakdown and managing symptoms with treatments like antihistamines, corticosteroids, or phototherapy. This reflects a specialized understanding of a specific medical condition and its treatment options.

The statement Indicates familiarity with managing hemolysis-induced pruritus, which involves treating the underlying cause of red blood cell breakdown and using symptomatic treatments like antihistamines or corticosteroids to alleviate itching. This reflects a specialized understanding of a specific medical condition and its treatment options. This question received the most agreement with 56%, indicating a strong knowledge base among respondents in this area.

**Table 3** Responses to opinion-related survey questionnaire statements on Gabapentin

Survey statement	Agree (%)	Disagree (%)
I don't believe in using Gabapentin which has a high abuse potential outside its approved indication	14 (35.9%)	23 (58.9%)
Haemodialysis-associated pruritus has other treatment options; I don't recommend using a non-approved drug.	14 (35.9%)	23 (58.9%)
Using gabapentin shouldn't be encouraged, the benefits don't outweigh its adverse effects.	15 (38.5%)	22 (56.4%)
I believe pruritus is easy to treat with other drugs, non-FDA-approved drugs such as gabapentin should be discouraged.	17 (43.6%)	20 (51.3%)
I am familiar with haemolysis-induced purities and their management.	22 (56.4%)	15 (38.5%)

Note: survey respondents who did not provide answers were not added to the calculation

The results from Table 4 of the survey show that out of the 10 knowledge/opinion questions, 3 outcomes revealed statistically significant p-values. These included students' opinions on using non-approved drugs for hemodialysis-associated pruritus, the high abuse potential of gabapentin, and the discouragement of its use due to potential adverse effects. The p-values for these responses were 0.015, 0.018, and <0.001 respectively, indicating that there are significant opinion differences that could be attributed to gender disparities or other demographic factors. Such findings underscore the necessity for targeted educational interventions that can address these misconceptions and enhance understanding within the clinical practice framework.

**Table 4** Results of the Crosstab analysis

Demographics	Knowledge/Opinion questions	N (%)	p-Value
Gender (Male & Female)	Haemodialysis-associated pruritus has other treatment options; I don't recommend using a non-approved drug	15 (40.5%)	0.015
Gender (Male & Female)	I don't believe in using Gabapentin which has a high abuse potential outside its approved indication	14 (37.8%)	0.018
Gender (Male & Female)	I believe pruritus is easy to treat with other drugs, non-FDA-approved drugs such as gabapentin should be discouraged.	18 (48.6%)	<.001

The researcher conducted this study to conduct a literature review and investigate how different aspects influenced the beliefs and perceptions of respondents regarding the familiarity, acceptance, use, and approval of gabapentin and pruritus. The crosstab and regression analysis revealed that the opinion differences between males and females emphasize potential gender disparities in medication perceptions and healthcare decision-making. Additionally, many respondents reported that their level of income influenced their clinical decision-making, with higher-income earners greatly supporting gabapentin for pruritus management. Moreover, some respondents reported that their prior working experiences, especially in healthcare-related fields, influenced their beliefs and perceptions concerning gabapentin and pruritus. The background of an individual can potentially impact their opinions regarding medication attitudes, beliefs, perceptions, and prescribing practices [5]. Healthcare practitioners and providers should be aware of these determinant factors when prescribing medications to patients, especially over-the-counter prescriptions.

The study acknowledges some limitations in that it relied on self-reported data which may present subject recall and social desirability bias. Also, the study utilized a sample population from a specific demographic, students admitted to Howard University. As such, it is challenging to generalize the findings to broader populations, including healthcare professionals or patients with diverse demographic and socioeconomic backgrounds. Additionally, the sample size may have limited the researchers regarding their results' generalizability and the statistical power to detect small but potentially significant relationships. Moreover, the study inadequately accounted for factors, such as cultural beliefs,

prior healthcare experiences, and access to healthcare resources which may have influenced the opinions of some respondents.

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#### 4. Conclusion

In conclusion, this study has successfully shed light on the knowledge and opinions of Howard University College of Pharmacy students regarding the off-label use of gabapentin for pruritus treatment. With 39 students participating, it revealed significant gaps in awareness about gabapentin's safety margin, its approved indications, and the potential risks associated with its off-label use for pruritus. The responses indicate a general tendency towards cautious use, with a majority advocating for alternative treatments over off-label gabapentin use due to concerns about adverse effects.

Crucially, the study has highlighted the importance of educational initiatives to bridge the knowledge gap among future healthcare professionals, emphasizing the safe and informed use of medications. Although the study is constrained by limitations such as self-reported data and a sample restricted to a single institution, the significant p-values from three out of ten knowledge and opinion questions underline the need for a more profound understanding and dialogue about off-label drug use within the pharmacy community. This research paves the way for future investigations to further explore these critical areas and foster evidence-based clinical practices.

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#### Compliance with ethical standards

##### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

##### *Statement of informed consent*

The study received approval from the Howard University Institutional Review Board (IRB). Informed consent from participants was not required as the study was conducted as part of the Drug Information Course.

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