

Pharmacists' Attitudes Towards Long-Term Use of Nasal Decongestants: A Cross-Sectional Study

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Background: Rhinitis medicamentosa is a nonallergic inflammation of the nasal mucosa caused by topical decongestants overuse. It mainly affects young and middle-aged adults. Therefore, the aim of this study was to investigate the attitudes of pharmacists regarding the utilization of over-the-counter intranasal decongestants.

Methods: An online cross-sectional study was conducted from November 2021 to January 2022. The target population of the study included pharmacists who work in community pharmacies in Saudi Arabia. Binary logistic regression analysis was used to identify predictors of having positive attitude towards controlling the use of decongestant.

Results: A total of 220 participants were included in this study. Around 15.0% of them reported that ND come with a physician prescription. The majority of the participants (87.3%) reported that the less than 5 days is the maximum safe duration for the use of NDs. Overall, the study participants demonstrated moderately positive attitude towards controlling the use of decongestant with a mean attitude score of 2.5 (standard deviation: 1.2) out of 5; which represents 50.0% of the maximum score. Binary logistic regression analysis identified that pharmacists aged 31–40 years were two-folds more likely to have positive attitude towards controlling the use of decongestant compared to others ($p < 0.05$). Around 45.9% of them reported that they recommend other over-the-counter treatments like nasal irrigation, nasal steroids, or antihistamine if they see a patient with RM asking for ND with or without prescription.

Conclusion: The majority of pharmacists in Saudi Arabia demonstrated sufficient awareness and understanding on the adverse effects associated with the excessive use of NDs. Rhinitis medicamentosa can be avoided by appropriate measures, highlighting the importance of raising awareness about the excessive use of decongestants among healthcare professionals and patients alike.

Keywords: rhinitis medicamentosa, pharmacist, attitude, nasal decongestants, Saudi Arabia

Introduction

Nasal decongestants (NDs) are often used for alleviating nasal and sinus congestion, the common cold, seasonal rhinitis, and allergic rhinitis.¹ Allergic rhinitis impacts around 10% to 20% of the global population, with a prevalence of 15% to 25% among children and adolescents.² For certain individuals, fluctuations in humidity, temperature, or exposure to cold or dry air can trigger nasal symptoms like congestion and rhinitis, including nasal blockage, sneezing, a runny nose, and irritation.³ OTC nasal decongestants are commonly used to alleviate symptoms such as sneezing and a runny nose. Decongestants enhance nasal airflow and drainage by inducing vasoconstriction, which decreases congestion and swelling of the nasal mucosa.¹ The diagnosis of rhinitis is indicated by the existence of one or more of the subsequent symptoms: nasal congestion, anterior and posterior runny nose, sneezing, and itching.⁴ In the management of rhinitis symptoms, it is customary to incorporate NDs as part of the therapeutic regimen. Nevertheless, the prolonged utilization of these medications may result in the development of a medical illness known as rhinitis medicamentosa

(RM).^{5,6} The start of RM exhibits variability, with documented occurrences ranging from three days to six weeks after sustained usage of intranasal decongestants.⁴

Rhinitis medicamentosa, also known as rebound congestion, is within the category of non-allergic rhinitis and encompasses a diverse range of non-IgE-mediated illnesses characterized by various symptoms including nasal congestion, rhinorrhea, sneezing, and postnasal discharge.⁷ The prevalence of this condition is highest among individuals in the young and middle-aged adult population, with a similar occurrence rate observed between males and females. The prevalence of this particular condition has been reported to range up to 9% in patients attending otolaryngology clinics.⁶ The initial phase of therapy involves the cessation of the implicated medications. However, the subsequent care of the condition is deficient in terms of comprehensive controlled investigations.^{8,9} Pharmacists assume a crucial duty in elucidating and assuring the secure use of drugs. A previous research study conducted in the United States investigated pharmacists' attitudes towards pediatric cough and cold products, including decongestants. The study revealed that most pharmacists were confident in recommending cough and cold products based on its safety and effectiveness.¹⁰ There are limited studies in this area in the middle east and Saudi Arabia. Therefore, the aim of this study was to investigate the attitudes of pharmacists regarding the utilization of over-the-counter intranasal decongestants. This might get insights that could aid in addressing the inappropriate use of decongestants and prevent their adverse effects.

Methodology

Study Design

An online cross-sectional study was conducted from November 2021 to January 2022.

Study Population

The target population of the study included pharmacists who work in community pharmacies in all regions of Saudi Arabia. Inclusion criteria were pharmacists who are currently working in Saudi Arabia in community pharmacies setting. There was no restriction on work shift, years of experience or gender. Pharmacists who are working in other pharmaceutical fields such as medical promotion were excluded from the study.

Sample Size

A minimum of 206 participants was required to ensure an 85% confidence level and a 5% margin of error. The sample size of this study was 220 pharmacists.

Data Collection

An online questionnaire was established based on previous literature review¹¹ and distributed via social media platforms (Facebook, WhatsApp, Instagram, and Snap Chat) to pharmacists in Saudi Arabia. Convenience sampling technique was applied to recruit the study participants. This sampling technique is based on the participation of the study participants based on their willingness and availability. Pharmacists who meet the inclusion criteria were asked to read the cover letter of the questionnaire which highlights the importance of the study. They were informed that their completion of the questionnaire is considered as written consent for participation.

The questionnaire segments included demographic information (region of practice, age, gender, qualification, nationality, duration of experience, and practice settings), pharmacists' practices regarding the prescription of NDs, pharmacists' awareness regarding the prescription of NDs, pharmacists' attitudes toward long-term use of NDs (using five questions of 5-point Likert scale format), pharmacists' perceptions and awareness regarding RM (asking the participants on number of RM cases encountered, action performed if they see patient with RM asking for ND with or without prescription, and what is the best medical specialty that might help patients with RM). The pharmacists' perception of ND prescription was assessed by 5-point Likert scale questions. The attitude score for the study participants was calculated by summing the scores from each question. The lower the score the more the attitude towards recommending the use of NDs. Besides, the participants were asked about the most prevalent symptoms of patients asking for decongestants and methods of improving public awareness regarding NDs.

A pilot study was done by sending the questionnaire to a selected group of pharmacists who had been omitted from the main study and asked to provide comments and feedback based on their knowledge and attitudes to establish validity. Electronic consent was obtained from the participants at the beginning of the questionnaire.

Ethical Approval

The study was reviewed and approved by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University with the ethical no- (IF-PSAU- 2021/03/18264) and written informed consent was obtained from participants.

Data Analysis

Data were extracted, revised, coded, and analyzed using the statistical software IBM SPSS version 22 (SPSS, Inc. Chicago, IL). All statistical analyses were conducted using two-tailed tests. A *P*-value less than 0.05 was statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables, including the pharmacists' personal data, education level, work setting, and years of experience in the pharmacy field. In addition, pharmacists' knowledge, attitudes, and practices regarding ND use, prescriptions, and effects were also tabulated. Crosstabulation was used to assess factors associated with pharmacists' attitudes toward ND prescription. Relations were tested using Pearson's chi-square test and the exact probability test for small frequency distributions. Binary logistic regression analysis was used to identify predictors of having positive attitude towards controlling the use of decongestant. The dummy variable used to define the dependent variable in the regression model was the mean attitude score for the study participants (which was 2.5 (sd: 1.2)). The significance level was assigned as *p*-value less than 0.05.

Results

Participants' Demographic and Practice Settings Characteristics

The survey was completed by 220 pharmacists. Around 30.0% of them were from the Eastern region. The majority of the participants (71.4%) were aged 20–30 years. More than half of them (59.1%) were males. The majority of them (81.8%) reported that they hold bachelor's degree. The vast majority of them (95.0%) were Saudis. The majority of them (71.4%) reported that they have been practicing pharmacy for less than 5 years. Almost half of the participants (52.7%) reported that they practice in government hospital pharmacy, [Table 1](#).

Pharmacists' Practices Regarding the Prescription of Nasal Decongestants

Almost one-third of the study participants (34.5%) reported that they receive an average of 3–5 NDs prescriptions per day. Around 15.0% of them reported that ND come with a physician prescription, [Table 2](#). The participating pharmacists reported that nasal obstruction is the most prevalent symptoms of patients asking for decongestants, [Figure 1](#).

Pharmacists' Awareness Regarding the Prescription of Nasal Decongestants

The majority of the participants (87.3%) reported that the less than 5 days is the maximum safe duration for the use of NDs, [Table 3](#).

Predictors of Pharmacists' Positive Attitude Towards Controlling the Use of Decongestant

Participants responses to items that examined their attitude toward long-term use of NDs are shown in [Table 4](#). Overall, the study participants demonstrated moderately positive attitude towards controlling the use of decongestant with a mean attitude score of 2.5 (sd: 1.2) out of 5; which represents 50.0% of the maximum score. Binary logistic regression analysis identified that pharmacists aged 31–40 years were two-folds more likely to have positive attitude towards controlling the use of decongestant compared to others ($p < 0.05$), [Table 5](#).

Table 1 Personal Data of the Study's Pharmacists in Saudi Arabia

Personal Data	Frequency	Percentage
Region		
Central Region	59	26.8%
Eastern Region	66	30.0%
Northern Region	16	7.3%
Southern region	21	9.5%
Western Region	58	26.4%
Age in years		
20–30	157	71.4%
31–40	44	20.0%
41–50	15	6.8%
> 50	4	1.8%
Gender		
Male	130	59.1%
Female	90	40.9%
Qualification		
Bachelor	180	81.8%
Diploma	18	8.2%
Master	14	6.4%
PhD	8	3.6%
Nationality		
Saudi	209	95.0%
Non-Saudi	11	5.0%
How long have you been in independent practice as a pharmacist?		
< 5	157	71.4%
5–10	27	12.3%
11–20	24	10.9%
> 20	12	5.5%
Practice setting		
Community pharmacy	65	29.5%
Government hospital pharmacy	116	52.7%
Private hospital pharmacy	39	17.7%

Pharmacists' Perceptions and Awareness Regarding Rhinitis Medicamentosa

Table 6 presents pharmacists' perceptions and awareness regarding RM in Saudi Arabia. Around half of the participants (52.7%) reported that they see in their practice on average less than 10 cases of RM per year. Around 45.9% of them

Table 2 Pharmacists' Practices Regarding the Prescription of Nasal Decongestants

Practice	Frequency	Percentage
How many prescriptions for ND* do you receive per day?		
< 2	73	33.2%
3–5	76	34.5%
6–10	39	17.7%
> 10	32	14.5%
Do patients asking for ND usually come with a physician prescription?		
Never	12	5.5%
Rarely	45	20.5%
Sometimes	77	35.0%
Most of the time	53	24.1%
Always	33	15.0%
When you receive a prescription for ND, do you typically screen for RM†?		
Never	18	8.2%
Rarely	30	13.6%
Sometimes	74	33.6%
Most of the time	53	24.1%
Always	45	20.5%

reported that they recommend other over-the-counter treatments like nasal irrigation, nasal steroids, or antihistamine if they see a patient with RM asking for ND with or without prescription. The most commonly reported methods of improving public awareness regarding ND in Saudi Arabia was pharmacist education, [Figure 2](#).

Discussion

According to the findings of our study, it was determined that around 34.5% of the participants reported receiving an average of 3–5 prescriptions for NDs on a daily basis. In the general population of Saudi Arabia, approximately 45.1% reported utilizing NDs.¹² Furthermore, within the participants of this study, around 15.0% indicated obtaining NDs through a prescription from a physician. However, although there exists a minority of physicians who prescribe these medications, it has been observed that they are the primary prescribers of NDs, constituting over half of the users, while pharmacists advise approximately one-fifth of the cases.¹²

Our study findings revealed that around 20.5% of the participants reported a regular practice of checking for RM when prescribed NDs. Moreover, there has been a discernible rise in the global prevalence of RM associated with congestion.¹³ Consequently, pharmacists frequently include ND medications in prescriptions for rhinitis due to their extensive utilization in the field of rhinology, where they are commonly recommended for the general population.² Furthermore, the pharmacists who took part in our study indicated that nasal obstruction is the most commonly observed symptom among patients seeking decongestants. In fact, it was found that nasal obstruction accounted for the highest percentage (62.7%) of reported reasons for using NDs among the general population in Saudi Arabia.¹² It is worth noting that NDs are recommended for the treatment of acute rhinosinusitis in order to alleviate the distressing consequences of frequent nasal congestion and obstruction.^{1,8}

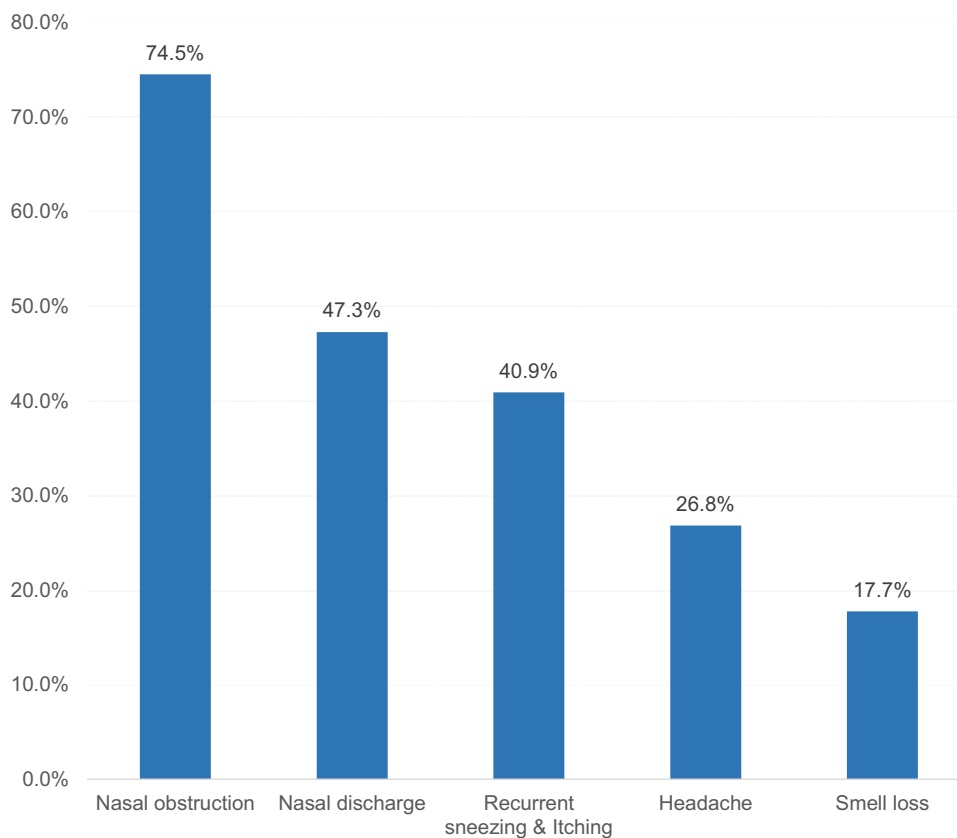


Figure 1 Most prevalent symptoms of patients asking for NDs.

Furthermore, a significant majority of the participants (87.3%) indicated that a duration of less than five days is considered the maximum safe period for the utilization of NDs. It has been observed that prolonged usage of decongestants can result in histologic alterations in the nasal respiratory mucosa, potentially leading to sinusitis.^{14–16} Additionally, there are potential risks associated with the improper use of NDs, including serious conditions such as heart attacks and strokes.^{17,18} However, it is important to note that discontinuing prolonged ND treatment may trigger a rebound congestion, characterized by the return of nasal congestion induced by rhinosinusitis.⁸ Consequently, it has been suggested that the duration of decongestant therapy should be limited to 3 days for patients with a history of rebound nasal congestion episodes.¹¹

In our study, the mean attitude score was determined to be 2.5, with a standard deviation of 1.2, out of five. This score suggests that the participants exhibited a moderately positive attitude towards regulating the usage of decongestants, accounting for around 50.0% of the maximum attainable score. There are several factors that may contribute to the

Table 3 Pharmacists' Awareness Regarding the Prescription of Nasal Decongestants

Awareness	Frequency	Percentage
What is the maximum safe duration for the use of NDs?		
1–2 days	24	10.9%
3–5 days	168	76.4%
1–2 weeks	23	10.5%
Safe for > 2 weeks	5	2.3%

Table 4 Pharmacists' Attitudes Toward Long-Term Use of Nasal Decongestants

Attitude items	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	No	%	No	%	No	%	No	%	No	%
Nasal decongestants should not be given to patients without prescription	40	18.2%	66	30.0%	41	18.6%	57	25.9%	16	7.3%
Advertisements about NDs on TV, radio, or social media lead to overuse of nasal decongestant	20	9.1%	25	11.4%	40	18.2%	88	40.0%	47	21.4%
I instruct patients regarding the safe duration of ND use	3	1.4%	10	4.5%	35	15.9%	47	21.4%	125	56.8%
The current warnings and patient education programs about the overuse of NDs are adequate	37	16.8%	71	32.3%	52	23.6%	51	23.2%	9	4.1%
Pharmacists have adequate knowledge of the risks associated with chronic ND use	10	4.5%	30	13.6%	57	25.9%	83	37.7%	40	18.2%

Table 5 Predictors of Positive Attitude Towards Controlling Use of Decongestant

Personal Data	Odds Ratio of Having Positive Attitude Towards Controlling the Use of Decongestant	P-value
Region		
Central Region (Reference category)	1.00	
Eastern Region	1.12 (0.55–2.26)	0.761
Northern Region	1.19 (0.39–3.58)	0.763
Southern region	1.30 (0.48–3.54)	0.602
Western Region	1.03 (0.50–2.14)	0.932
Age		
20–30 years (Reference category)	1.00	
31–40 years	2.03 (1.02–4.01)	0.043*
41–50 years	1.12 (0.39–3.23)	0.840
> 50 years	1.28 (0.18–9.29)	0.810
Gender		
Female (Reference category)	1.00	
Male	1.16 (0.68–1.99)	0.592
Qualification		
Bachelor (Reference category)	1.00	
Diploma	1.17 (0.44–3.08)	0.753
Master	2.10 (0.68–6.52)	0.198
PhD	1.17 (0.28–4.82)	0.829

(Continued)

Table 5 (Continued).

Personal Data	Odds Ratio of Having Positive Attitude Towards Controlling the Use of Decongestant	P-value
Nationality		
Non-Saudi (Reference category)	1.00	
Saudi	1.64 (0.47–5.76)	0.443
How long have you been in independent practice as a pharmacist?		
< 5 (Reference category)	1.00	
5–10	1.90 (0.83–4.37)	0.128
11–20	1.55 (0.65–3.67)	0.322
> 20	2.62 (0.76–9.06)	0.129
Practice setting		
Community pharmacy (Reference category)	1.00	
Government hospital pharmacy	1.48 (0.80–2.72)	0.212
Private hospital pharmacy	0.62 (0.27–1.42)	0.258

Note: *p<0.05.

Table 6 Pharmacists' Perceptions and Awareness Regarding Rhinitis Medicamentosa in Saudi Arabia

Rhinitis Medicamentosa	No	%
On average, how many cases of RM do you see in your practice per year?		
0–10	116	52.7%
11–20	35	15.9%
21–30	16	7.3%
31–40	14	6.4%
> 40	39	17.7%
What do you typically do if you see a patient with RM asking for ND with or without prescription?		
Recommend other over-the-counter treatments like nasal irrigation, nasal steroids, or antihistamine	101	45.9%
I do not give him/her and ask him/her to seek medical help	71	32.3%
Give him/her the medication that he/she wants	39	17.7%
I ask for prescription	2	0.9%
I give medicine containing no steroids	2	0.9%
Advise him/her to ask his/her physician	1	0.5%
Counsel patient and give if I believe patient has blocked nose	1	0.5%
Give him and refer him to physician	1	0.5%
Hard to determine if it is medicamentosa or not	1	0.5%
I mention that this is bound to happen due to the misuse, and that he/she should stop ND for two weeks	1	0.5%
What is the best medical specialty that might help patients with RM?		
Otorhinolaryngology	124	56.4%
Family medicine	59	26.8%
Internal medicine	18	8.2%
Emergency medicine	11	5.0%
General surgery	7	3.2%
Clinical pharmacy	1	0.5%

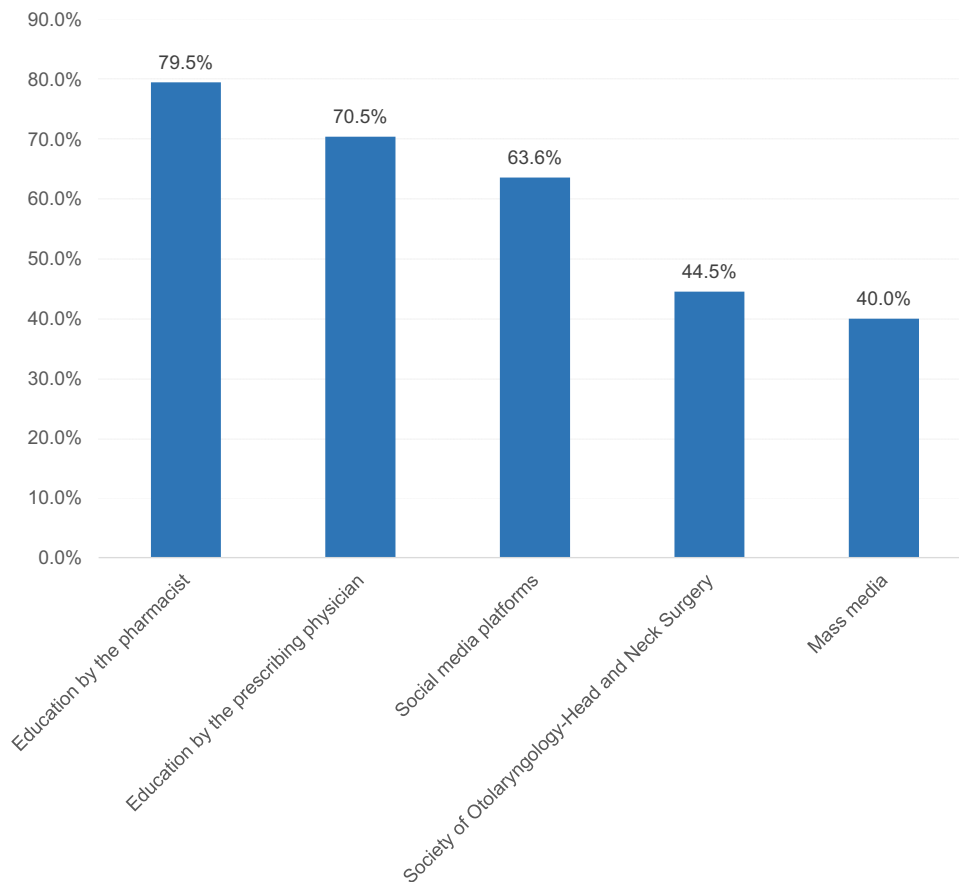


Figure 2 Methods of improving public awareness regarding NDs.

moderate attitude score observed in this context. One such factor is the availability of NDs for consumption without a prescription, which is influenced by patient-related factors.¹⁹ Additionally, there is a lack of general population awareness regarding the use of NDs and their associated side effects in Saudi Arabia. This suggests that there is room for improvement in terms of public knowledge and understanding.^{20,21}

The study findings indicate that binary logistic regression analysis revealed a significant association between age and pharmacists' attitudes towards regulating decongestant use. Specifically, pharmacists between the ages of 31 and 40 exhibited a twofold higher likelihood of possessing a positive attitude compared to their counterparts. Furthermore, the study suggests that pharmacist attitudes towards regulation of decongestant use tend to increase with greater professional experience.²² This finding aligns with previous research highlighting the importance of effective pharmacist-patient communication in optimizing treatment outcomes.²³ Conversely, the study also found that future health professionals may not be adequately prepared to promote health education regarding the rational use of NDs. This lack of preparedness may contribute to insufficient awareness about certain medications, potentially leading to self-medication and associated risks.²⁴

The findings of the study indicate that approximately 52.7% of the participants reported encountering RM in their clinical practice, with an average of less than 10 cases per year. Rhinitis medicamentosa is a prevalent condition that arises as a consequence of excessive and prolonged utilization of topical NDs.^{6,25} This condition is characterized by a significant obstruction of the nasal airway.²⁶ The study findings indicate that approximately 45.9% of the participants expressed a preference for recommending alternative over-the-counter treatments such as nasal irrigation, nasal steroids, or antihistamines when confronted with a patient seeking ND for RM, with or without a prescription. Previous research has demonstrated that the use of topical nasal corticosteroids can effectively reduce nasal airway resistance in individuals with RM.^{27,28} Additionally, other treatment approaches, including saline rinses, oral steroids, and antihistamines, are

believed to be beneficial in the treatment and management of RM.^{8,29} However, the primary approach for treating RM is the cessation of ND usage.²⁹ Referral to otolaryngologists, who are specialized clinicians responsible for treating various diseases including RM, is also recommended.¹¹ In our study, we found that 56.4% of participating pharmacists reported otorhinolaryngology as the best medical specialty to assist patients with RM. It is important to note that certain measures can impact and prevent the occurrence of RM, such as the use of warning labels. While warning labels play a crucial role in ensuring patient safety, it is unfortunate that many of these labels are inadequately positioned, small in size, and lack contrast compared to other information. This can contribute to the excessive and prolonged use of NDs.²⁹

Furthermore, the study findings revealed that the predominant method employed to increase public awareness regarding NDs in Saudi Arabia was through pharmacist education. This can be attributed to the fact that community pharmacists in Saudi Arabia offer patient-centered care services.³⁰ Additionally, pharmacists are able to effectively educate their patients during outpatient consultations.³¹

Our study's findings underscore the importance of implementing regulatory measures and conducting vigilant oversight of ND administration, in light of the possible hazards that may arise from extended use, including paranasal sinusitis and RM. Physicians should exercise caution in prescribing these medications, placing emphasis on accurate diagnosis and providing patients with comprehensive information regarding the associated risks. Additionally, pharmacists should assume a pivotal role in patient education, offering guidance on appropriate usage and advocating for alternative treatments such as nasal irrigation and steroids. In contrast, it is recommended that public awareness campaigns, which involve the participation of pharmacists, prioritize the dissemination of information regarding the potential hazards associated with excessive utilization. This can be achieved through the implementation of conspicuous warning labels on packaging, as well as the establishment of improved communication channels between pharmacists and patients. These measures are crucial in promoting the safe and responsible use of NDs, thereby contributing to improved health outcomes.

Conclusion

Most pharmacists in Saudi Arabia showed adequate awareness and knowledge about the complications of ND overuse. Rhinitis medicamentosa is a preventable condition; therefore, awareness of decongestant overuse among both healthcare professionals and patients is essential. Diagnosis of this condition can be challenging, and the literature lacks a detailed approach to treating these patients.

Data Sharing Statement

Data are available upon request from the author.

Ethics Approval and Consent to Participate

The study was reviewed and approved by the Deanship of Scientific Research at Prince Sattam bin Abdulaziz University with the ethical no- (IF-PSAU- 2021/03/18264) and written informed consent was obtained from participants.

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Disclosure

The authors declare no competing interests in this work.

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