

Real-world physician practices on the diagnosis and management of allergic rhinitis in the Philippine setting

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ABSTRACT

Background: Physician awareness and adherence to guidelines varies among countries and between types of physician practice. Identifying the needs of the physician and patient is essential to improve patient outcome. Data on physician diagnosis and management of allergic rhinitis (AR) in the Philippines is currently limited.

Objective: Study objectives are to assess awareness and use of guidelines, practices on diagnosis and management of intermittent and persistent AR, reasons for choice of therapy, and familiarity with immunotherapy.

Methods: A cross-section of 590 specialist and 223 subspecialist physicians from 17 regions of the Philippines were surveyed from October 2021 to July 2022. Survey consisted of a 12-point validated online questionnaire on knowledge and use of guidelines for diagnosis and treatment, use of diagnostic tests, preferred pharmacologic treatment, preferred adjuvant therapy, reasons for treatment choice, and familiarity with immunotherapy.

Results: Seventy-seven percent of respondents used Allergic Rhinitis and its Impact on Asthma guidelines for diagnosis and management of AR. Three-fifths of respondents “always” routinely evaluated AR patients’ history and performed a physical examination for asthma; 57% of respondents “always” routinely evaluated asthma patients’ history and performed a physical examination for AR. Allergy testing was “sometimes” recommended by 62.2%. Oral second-generation antihistamines were the preferred choice for the treatment of intermittent AR. Intranasal steroids were the preferred treatment for persistent AR. Top reasons for choice of treatment were guideline recommendations, efficacy, onset of action, cost, and availability of treatment.

Conclusion: Filipino specialists and subspecialists are aware and use guidelines in diagnosis and management of AR. Clinical history and physical examination are the cornerstone of diagnosis. Management practices for intermittent and persistent AR are similar for both groups. Recognizing the role of patient treatment preferences and allergen-specific immunotherapy remains to be a gap in the management of AR by Filipino physicians.

Keywords: Allergic rhinitis; diagnosis; Filipino physicians; guidelines; management; Philippines

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Introduction

Allergic rhinitis (AR) is a global health problem whose prevalence has increased significantly during the last 2 decades [1, 2]. Modernization, urbanization, changing lifestyles, climate change, and their subsequent effect on epigenetic mechanisms are identified as the major factors driving this increase [3, 4]. A review of published literature on prevalence rates across the world reports rates of 3.5% to 54.5% for America, 1.0% to 43.9% for Europe, and 1.0% to 47.9% for Asia [5]. In the Philippines, prevalence ranges from 18% in urban to 22.1% in rural areas [6]. It is suggested that prevalence rates in Western countries may be reaching a plateau but Asian data continue to show an increasing trend [7, 8].

International guidelines from the Allergic Rhinitis and its Impact on Asthma (ARIA), the Global Allergy Asthma European Network, European Academy of Allergy and Clinical Immunology, and national guidelines from several countries including Japan, Singapore, Malaysia, Philippines, US, Britain, South Africa provide recommendations that aim to standardize the diagnosis and management of AR and improve patient outcomes. However, physician awareness and adherence to guidelines varies among countries and between types of physician practice. A survey of 107 Italian general physicians reports 57% compliance with guidelines for AR patients without

concomitant asthma; adherence increases to 89% for the treatment of patients with more severe disease [9]. In the US, 71.6% of American otolaryngologists report “only a little” deviation from the guidelines [10]. A Philippine study reports greater awareness (90% versus 74%) and use (84% versus 54%) of the ARIA guidelines among specialists versus general physicians. The authors cite continuing medical education activities as a factor for greater knowledge and adherence to guidelines [11]. Differences in guideline characteristics, social, organizational, economic, and political context affect guideline implementation in various countries and may ultimately influence physician adherence [12].

In Asia, including the Philippines, with its dense populations and increasing prevalence rates, country-specific information is necessary to identify physician and patient needs related to AR so that appropriate strategies to improve patient outcomes can be developed. However, Philippine data on physician diagnosis and management of AR continues to be limited. This study addresses these gaps by assessing awareness and use of guidelines, indications for referral to other physicians, and practices on diagnosis and management of intermittent and persistent AR among Filipino specialists and subspecialists in the real-world setting. The survey is a collaborative effort among members of 4 subspecialty societies involved in the care of patients with AR; the results can provide insights for the formulation of practical and relevant national guidelines in the diagnosis and management of AR in Filipino patients.

Methods

Respondents

Ethical approval for this study (QMMC REB GCS 2021-16) was provided by the Institutional Scientific and Ethical Review Board of Quirino Memorial Medical Center, Quezon City, Philippines (Co-chair Dr. J. Bautista) on May 21, 2021. A cross-section of specialist and subspecialist physicians were surveyed from October 2021 to July 2022. Classification as a specialist or subspecialist was based on membership to a society. If a physician was a member of both a specialist and a subspecialist society, that respondent was classified as a subspecialist. Participants had to be in active practice and members in good standing in their respective societies with updated contact information to be included in the study.

Respondent specialists were recruited from the Philippine Academy of Family Physicians (family physicians with training), Philippine College of Physicians (internists), and Philippine Pediatric Society (pediatricians). Respondent subspecialists were recruited from the Philippine College of Chest Physicians (adult pulmonologists), Philippine Academy of Pediatric Pulmonologists (pediatric pulmonologists), Philippine Society of Allergy, Asthma and Immunology (allergists), and Philippine Society of Otolaryngology-Head and Neck Surgery (otolaryngologists).

Respondents' participation in the study was voluntary. Respondents were made aware of the aims and relevance of the study. Those who responded to the questionnaire indicated their consent to participate in the study. It was understood that those who did not respond did not consent to participate.

Questionnaire

The study survey consisted of a 12-point questionnaire which was based on a validated questionnaire used in a previously

published Philippine survey but was adapted and validated and pretested for use as an online tool [11]. The questions assessed knowledge and use of guidelines for the diagnosis and treatment of AR, use of diagnostic tests, preferred treatment for intermittent and persistent AR, preferred adjuvant therapy, reasons for choice of therapy, and familiarity with immunotherapy. Preferred treatment as to the severity of the symptoms of intermittent or persistent disease was not included in the study. The full questionnaire is available in Appendix 1, <http://links.lww.com/PA9/A2>.

Sample size and data collection

A minimum sample size of 799 respondents was set based on the following assumptions: 74% of physicians were expected to follow ARIA guidelines [11], total target population size was 23,348 (for finite population correction factor), confidence interval (CI) was 95% and precision 3%. The target number of respondents from each society was based on proportional allocation as follows: Philippine College of Physicians had 8,000 members, 273 was the target sample size; Philippine Academy of Family Physicians, 222 out of 6,500; Philippine Pediatric Society, 173 out of 5,084. The sampling from the subspecialty societies was as follows: 86 out of 2,500 from the Philippine College of Chest Physicians; 33 out of 943 from the Philippine Society of Otolaryngology-Head and Neck Surgery; 7 out of 189 from the Philippine Academy of Pediatric Pulmonologists; 5 out of 132 from the Philippine Society of Allergy, Asthma, and Immunology.

Letters of invitation to participate in the study were emailed to the various societies. Each society disseminated the link to the questionnaire in Google form to their members whose emails and messaging applications were known and active, via email blast and secured group chats to their members. The number of these members per society were estimated to be between 90% and 95% of its existing roster of members. The Google form was kept open for respondents to answer once from October 2021 to July 2022. Participant recruitment concluded once the target sample size was reached for each society.

Data from the Google forms were exported and stored using Microsoft Excel (Mac Version 16.35).

Statistical analysis

Demographic characteristics were summarized using descriptive statistics. Categorical variables were reported as frequencies and percentages. For the primary study objective, point estimates using 95% CI were used to compute the proportion of physicians who followed guidelines. Chi-square test was used to compare specialist versus subspecialist for the following variables: duration of practice, type of practice, diagnostic methods used, preferred treatment options, and familiarity with immunotherapy. When the sample size requirement of the chi-square test was not met for a particular variable, Fisher's exact test was used. Level of significance was set at 5% for all hypotheses tested. StataMP Version 14 for Mac (StataCorp LLC, College Station, TX, USA) was used for analysis.

Results

Survey respondents

A total of 813 physicians from 17 regions of the Philippines participated in the survey. Of these, 72.6% were specialists and

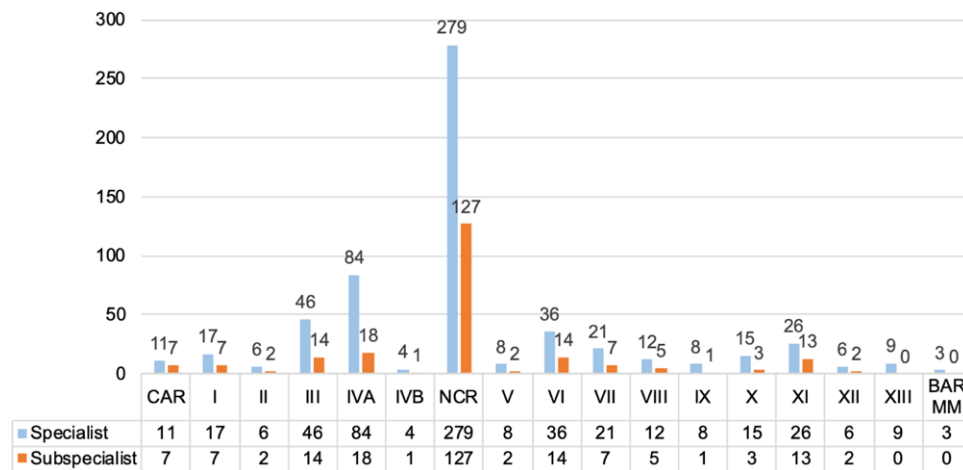


Figure 1. Respondents' region of practice.

27.4% subspecialists. Half of the respondents practiced their profession for greater than 10 years. Specialist and subspecialists did not vary significantly in terms of duration of practice ($P = 0.956$).

For type of practice, 53% of respondents practiced only in private hospitals while 16.6% worked exclusively in government/public hospitals; 30.4% had a mixed type of practice. There was a statistically significant difference in the type of practice between specialist and subspecialist ($P < 0.001$) with fewer subspecialists (4.9%) working in a public hospital compared to specialists (21%).

For area of practice, almost half of all respondents (49.9%), practiced in the National Capital Region. The regions of practice could not be compared due to sparseness of data in some regions; there were no subspecialist respondents in Region XIII and Bangsamoro Autonomous Region in Muslim Mindanao. Respondents' region of practice is summarized in Figure 1.

AR guidelines followed

A majority of respondent physicians, 77% (95% CI, 74.1–79.9), used the ARIA guidelines for the diagnosis and management of AR.

There was a significant difference in the proportion of specialists and subspecialists' use of the various AR guidelines. More subspecialists used the ARIA Guidelines, 85.2% (95% CI, 80.5–89.9) versus 73.9% (95% CI, 70.4–77.4; $P = 0.001$) and the Philippine Society of Otorhinolaryngology-Head and Neck Surgery Clinical Practice Guidelines, 18.8% (95% CI, 13.7–24) versus 8.6% (95% CI, 6.4–10.9; $P < 0.001$). However, more specialists used the Compendium on Philippine Medicine on AR by the Philippine Society of Allergy Asthma and Immunology, 30.3% (95% CI, 26.6–34) versus 17% (95% CI, 12.1–22; $P < 0.001$). There was no statistically significant difference between the 2 groups in their use of the Clinical Practice Guidelines of the American Academy of Otolaryngology-Head and Neck Surgery ($P = 0.287$). These are summarized in Figure 2.

Diagnosis of allergic rhinitis

Three-fifths of the respondents, 58.4%, “always” routinely evaluated AR patients' history and performed physical examination for asthma, such as inspection for tachypnea or dyspnea and chest auscultation. There was a significantly greater number of

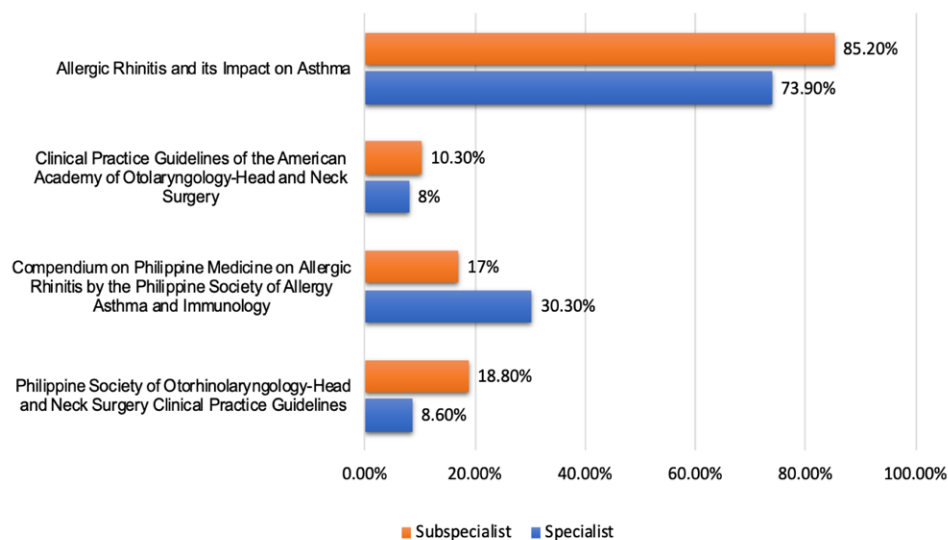


Figure 2. Guidelines used by physicians in the diagnosis and treatment of allergic rhinitis.

subspecialists who reported doing these evaluations routinely for AR patients ($P < 0.001$).

Similarly, 57% of the respondents “always” routinely evaluated bronchial asthma patients’ history and performed physical examination for AR. This included inspection for conjunctivitis, allergic shiners, Dennie-Morgan folds and boggy of the nasal turbinates and the Visual Analog Scale. A significantly greater number of subspecialists reported doing these evaluations routinely for bronchial asthma patients ($P = 0.001$).

Allergy testing (such as the skin prick test or serum-specific IgE determination), was “sometimes” recommended by 62.2% of the respondents. A greater number of subspecialists recommended allergy testing; the difference between the 2 groups was statistically significant ($P < 0.001$).

Management of intermittent allergic rhinitis

The most common medication used by all respondents for intermittent AR was an oral second-generation antihistamine (78.8%). This was followed by oral antihistamine + antileukotriene (33.5%), intranasal saline wash (31.6%), intranasal steroids (29.5%), and an oral antihistamine + decongestant (25.6%).

A significantly greater number of specialists prescribed an oral 1st generation antihistamine (21.2% versus 9.9%, $P < 0.001$), oral antihistamine + decongestant (28% versus 19.3%; $P = 0.011$), and oral multivitamins (12.7% versus 4%, $P < 0.001$). In contrast, a significantly greater number of subspecialists prescribed intranasal steroids (26.9% versus 36.3%, $P = 0.009$). The medications used for intermittent AR by the 2 groups are summarized in Figure 3.

The top 5 preferred treatments for the management of intermittent AR were oral second-generation antihistamine (Mean:1.6,SD:1.1), oral 1st generation antihistamine (Mean:2.8, SD:1.4), oral antihistamine + antileukotriene (Mean:3, SD:1.4),

antileukotrienes (Mean:3.2, SD:1.1), and intranasal steroids (Mean: 3.2, SD:1.2).

Management of persistent allergic rhinitis

For persistent AR, the most common medication prescribed by all respondents was intranasal steroids (68.1%). This was followed by an oral second-generation antihistamine (54.5%), oral antihistamine + antileukotriene (47.6%), antileukotrienes (29%), and intranasal saline wash (27.4%). A greater number of subspecialists prescribed intranasal steroids (61.4% versus 86.1%, $P < 0.001$) and intranasal saline wash (24.6% versus 35%, $P = 0.003$). Specialists prescribed more oral multivitamins (9.3% versus 4.9%, $P = 0.041$). Figure 4 summarizes medications used by the 2 groups for persistent AR.

The top 5 preferred treatment for the management of persistent AR were intranasal steroids (Mean:2, SD:1.3), oral second-generation antihistamine (Mean:2.4, SD:1.3), oral antihistamine + antileukotriene (Mean:2.7, SD: 1.4), antileukotrienes (Mean:3.2, SD: 1.2), and oral antihistamine + oral steroids (Mean: 3.3, SD:1.4).

The top reasons for choice of treatment, in descending order, were guideline recommendations (Mean:1.9, SD: 1.3), efficacy (Mean:2.1, SD:1.1), onset of action (Mean:2.9, SD1.1), cost (Mean:3.6,SD: 1.1), and availability of the treatment (Mean:3.6, SD:1.2), safety/side effects (Mean: 3.8, SD: 1.2), convenient dosing (Mean: 4.0, SD: 1), tolerability (Mean: 4.1, SD: 0.9), and patient preference (Mean: 4.2, SD: 1.1).

Other treatment-related options

About 70% of the respondents were familiar with allergen immunotherapy with a significantly greater proportion of subspecialists familiar with this mode of management (87% versus 62.7%, $P < 0.001$).

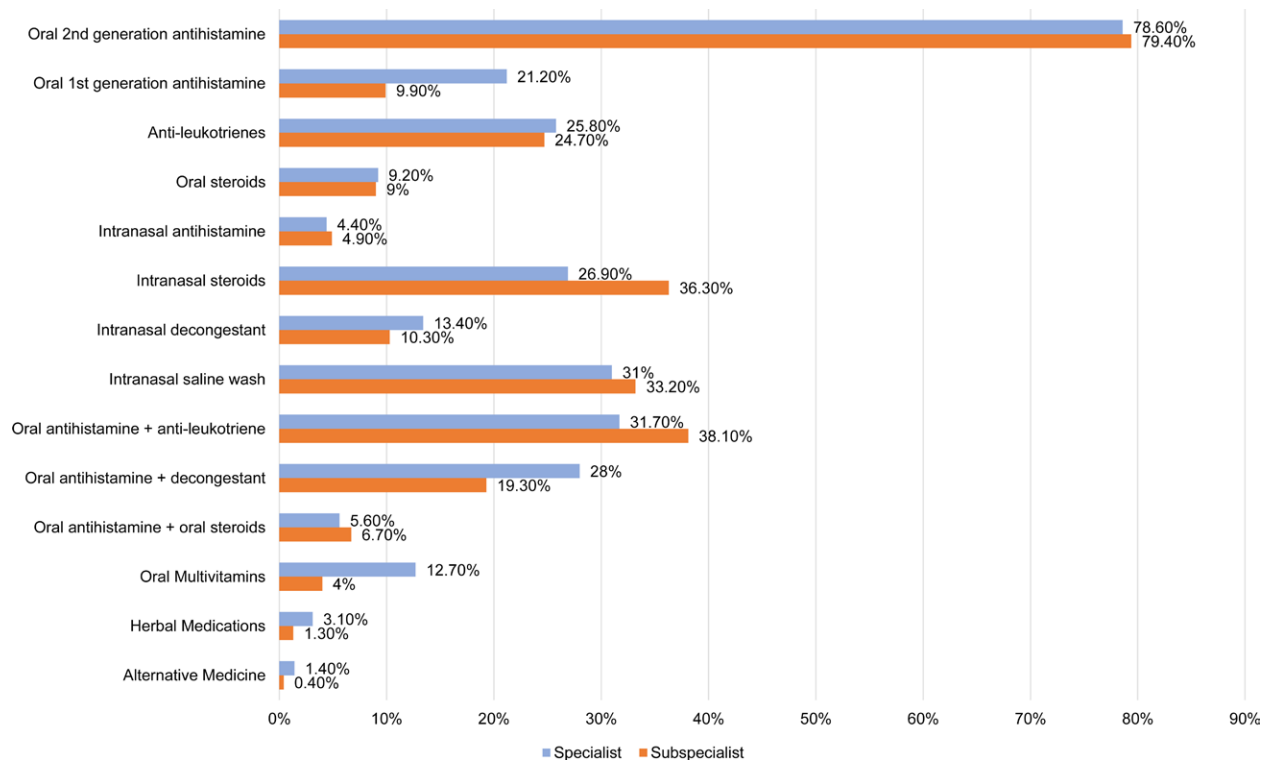


Figure 3. Medications used for intermittent allergic rhinitis.

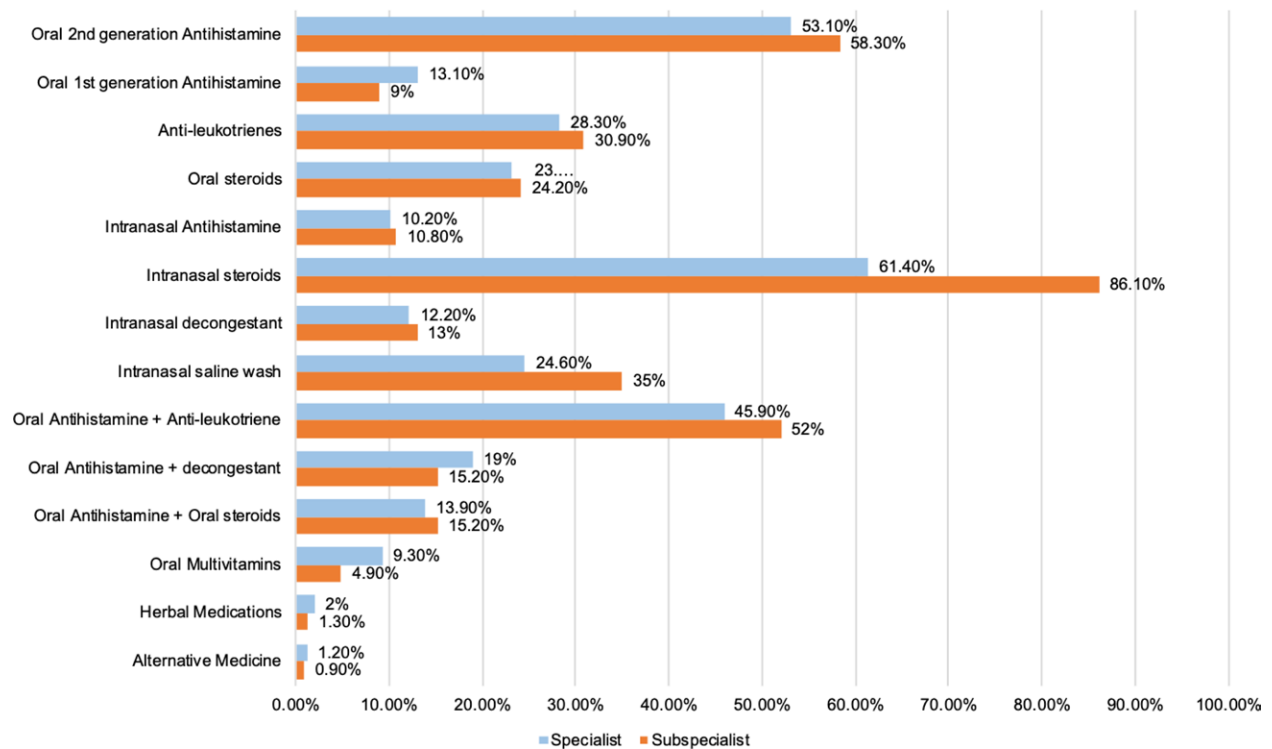


Figure 4. Medications used for persistent allergic rhinitis.

Moreover, 84.4% of all respondents referred patients to other specialists. Specialists and subspecialists did not significantly vary in terms of referral of patients to other specialists ($P = 0.295$). Among those who referred their patients ($n = 686$), the 3 most common reasons for the referral were presence of uncontrolled symptoms (85.1%), presence of complications (39.1%), and presence of comorbidities (30.9%). Reasons for referral to other specialists are summarized in Figure 5.

Discussion

Survey respondents and the ARIA guidelines

The profile of physician respondents in the survey reflects the status of the local healthcare system. Almost half of the respondents (49.9%) practice in the National Capital Region; there are no subspecialist respondents from the far-flung areas of Region XIII and the Bangsamoro Autonomous Region in Muslim Mindanao. More than half (53%) of respondents practice exclusively in private hospitals where services are paid for by patients at the point of service using mostly out-of-pocket payment and a small percentage covered by the national insurance PhilHealth [13]. The disparity in the distribution of specialist and subspecialist physicians across the various regions of the country may be due to lack of employment opportunities, lower income, and safety issues concerning medical practice in far-flung areas. Furthermore, the Philippines is 1 of the major exporters of healthcare professionals across the globe which may lead to scarcity of physicians in many areas.

Although there are various national and international guidelines for AR, the ARIA is well-established and used extensively. This study shows that Filipino physicians, regardless of their specialty or subspecialty, are familiar with and follow the ARIA guidelines. This is consistent with the findings of an earlier

Philippine study in 2015 [11] which show that 74% of general physicians and 90% of specialists in the NCR use this guideline, this is statistically significant at $P = 0.01$. The ARIA is incorporated in the training curriculum of medical students, residents, and fellows. It is deemed by the Philippine medical community to be applicable to the local AR population.

Evaluation of allergic rhinitis

Majority of respondents, both specialists and subspecialists, “always” routinely evaluate AR patients’ history and perform physical examination for asthma. Also, most respondents “always” routinely evaluate bronchial asthma patients’ history and perform physical examination for AR. A statistically significant number of subspecialists perform these evaluations compared with specialists ($P < 0.001$ for AR and $P = 0.001$ for asthma). The link between AR and asthma as having common genetic, epidemiologic, pathogenetic, pathophysiologic, and clinical mechanisms, as advocated by the ARIA, is well recognized by the local medical community, especially by the subspecialists [14]. Cognizant of the close relationship between the upper and the lower airways, as proposed by the One Airway Disease model, local physicians advocate for a comprehensive and individualized management for AR and its comorbid diseases like asthma. A thorough evaluation of the presence of AR comorbid conditions is recommended because patient quality of life and disease severity may be significantly impacted.

Clinical history and physical examination remain to be the cornerstone in the diagnosis of AR. However, in vitro or in vivo allergy testing may be necessary to confirm the diagnosis of AR. These tests provide information for directed allergen avoidance measures and, for difficult-to-control cases, allergen-specific immunotherapy. In this study, 62.2% of physician respondents “sometimes” recommend allergy testing. This is probably due to the added cost associated with the diagnostic procedure; these

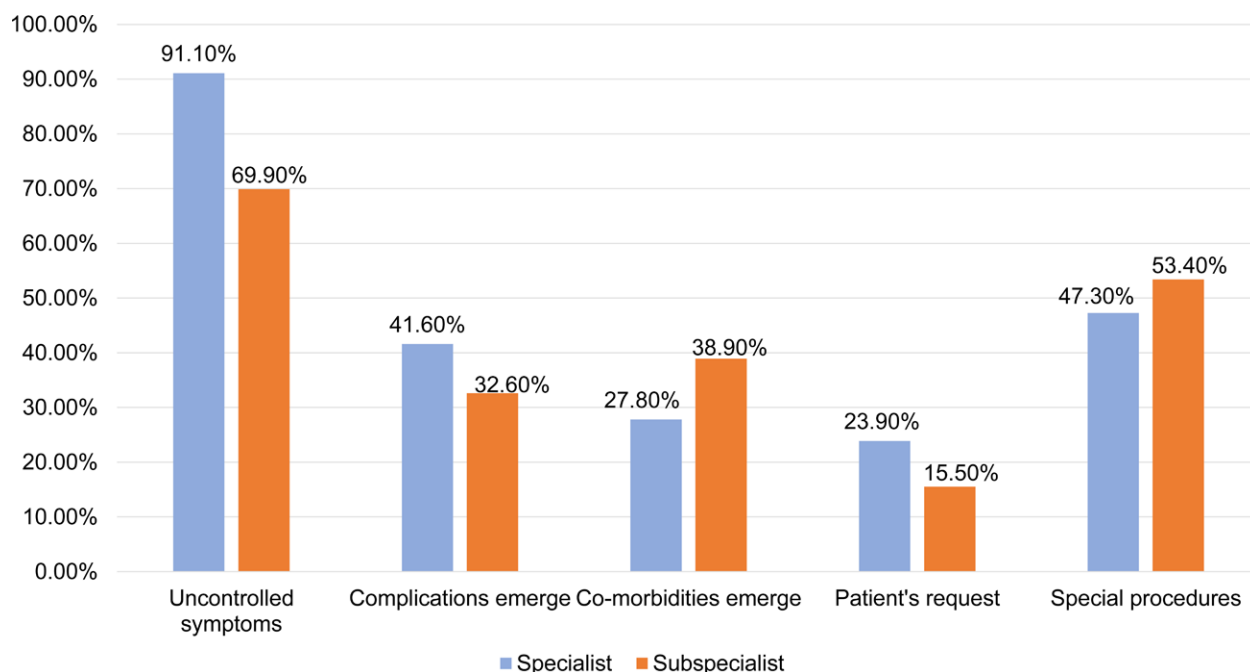


Figure 5. Reasons for referral to other specialists.

tests are not covered by the national or private health insurance. It may also be due to the limited distribution of trained subspecialists who perform these tests. There is a statistically significant greater number of subspecialists who recommend allergy testing compared with the specialist group ($P < 0.001$). Subspecialists see more complicated and severe cases that need additional or confirmatory tests necessary for the appropriate management of AR.

Management of allergic rhinitis

For the management of AR, respondents cite guideline recommendations (Mean: 1.9, SD: 1.3) as the primary reason for their choice of pharmacotherapy. Other drivers for treatment selection include efficacy, onset of action, cost, and availability. These findings are consistent with an earlier study of physicians attending to AR patients in the NCR [11]. Interestingly, patient preference is listed as the least consideration for choosing a pharmacologic treatment. This is inconsistent with the latest ARIA recommendations which emphasize, that in the real-world setting, patient preference dictates compliance and subsequently, efficacy of treatment [15].

Most Filipino patients, however, consider physicians as the authority in healthcare and will follow the prescribed treatment. Patient preferences are rarely verbalized and recording of symptoms as a means of tracking clinical response is not widely practiced. Hence, scientific evidence on the efficacy of treatment becomes the main reason for choosing medications.

For patients with intermittent AR, both specialists and subspecialists (78.8% of respondents) prefer oral second-generation antihistamines. This is also the top preferred medication (Mean: 1.6, SD: 1.1) when respondents were asked to rank the options for therapy. This practice is consistent with the ARIA recommendations for the management of intermittent AR [16]. New-generation antihistamines are also recommended for intermittent AR by clinical practice guidelines from American, European, and local experts in AR because of their proven efficacy. They are inexpensive and convenient because of the

once-daily dosing, are readily accessible, and have a rapid onset of action [17, 18].

A statistically significant number of specialists prescribe oral first-generation antihistamines either as monotherapy (21.2% versus 9.9%, $P < 0.001$) or as fixed-dose combination with an oral decongestant (28% versus 19.3%; $P = 0.011$). Some respondents still prescribe first-generation antihistamines despite ARIA recommendations against its use for AR. These medications are cheaper, widely available, and can be purchased without a prescription. While first-generation antihistamines are effective for AR symptoms, they are known to cause sedation, psychomotor impairment, cognitive loss, anticholinergic effects, and may reduce the rapid eye movement sleep [19]. With these safety issues, clinical guidelines agree in recommending against the use of first-generation antihistamines for AR [16–18]. A significant number of subspecialists use intranasal steroids for patients with intermittent AR (26.9% versus 36.3%, $P = 0.009$). Subspecialists are more likely to use intranasal steroids because they are referred or consulted by patients with moderate to severe symptoms.

Other preferred treatment options reported by the respondents are oral antileukotrienes as a single agent (Mean: 3.2, SD: 1.1) or in combination with second-generation antihistamines (Mean: 3, SD: 1.4). For patients with seasonal AR, ARIA recommends the use of either an oral antihistamine or an antileukotriene. For perennial AR, an oral second-generation antihistamine is preferred over an antileukotriene [20]. The AAO-HNS recommends that antileukotrienes not be used as primary AR therapy although a subset of patients suffering from AR and asthma may benefit from this drug. There is conflicting evidence as to whether combined therapy of montelukast and an oral antihistamine is superior to either drug alone. Therefore, this drug combination is not recommended [18]. Recently, studies report that the use of montelukast may cause neuropsychiatric adverse events. Currently, the US Food and Drug Administration restrict its use for AR [21].

For patients with persistent AR, intranasal corticosteroid is the drug of choice for both specialists and subspecialists (68.1%

of respondents). This practice is again consistent with ARIA guidelines. Intranasal corticosteroids are potent agents that reduce inflammatory cells, allergic mediators, and cytokines. They are more effective in the relief of AR nasal symptoms, including nasal congestion, compared with second-generation antihistamines and/or antileukotrienes. They also have a good safety profile for both children and adults. Because of these characteristics, this medication is recommended by ARIA and other clinical guidelines for persistent and moderate to severe AR [15, 17, 18]. Other preferred treatment for the management of persistent AR includes oral second-generation antihistamine (Mean: 2.4, SD: 1.3), oral antihistamine + antileukotriene (Mean: 2.7, SD: 1.4), antileukotrienes (Mean: 3.2, SD: 1.2), and oral antihistamine + oral steroids (Mean: 3.3, SD: 1.4).

A statistically significant number of subspecialists prescribe intranasal corticosteroids (61.4% versus 86.1%, $P < 0.001$) and intranasal saline wash (24.6% versus 35%, $P = 0.003$). Saline nasal irrigation is reported by systematic reviews to significantly decrease nasal symptoms of AR and therefore is recommended as adjunctive AR management for both adults and children [22, 23].

It is however surprising to note that specialists prescribe more oral multivitamins for both intermittent (12.7% versus 4%, $P < 0.001$) and persistent (9.3% versus 4.9%, $P = 0.041$) types of AR; this is not supported by current guidelines. A systematic review on health supplements in AR indicates that vitamins C, D, and E may show some encouraging results but more good quality clinical studies and qualitative research are necessary to draw definitive conclusions [24]. In this study, there are also a few respondents who subscribe to herbal medications (1.8%) and alternative medicines (1.1%). A meta-analysis reports that herbal medications are safe and provide improvement of nasal symptoms and disease-specific quality of life among AR patients compared with placebo [25]. In contrast, a systematic review on alternative medicine for AR reports that high-quality studies are lacking to prove its efficacy and safety [26]. In the Rhinitis 2020 Practice Parameter Update, the authors cite that a recommendation for or against the use of herbal products for the treatment of AR cannot be done due to lack of adequate studies [27].

Around 70% of respondents are familiar with allergen immunotherapy and a statistically significant proportion of subspecialists are familiar with this treatment (87% versus 62.7%, $P < 0.001$). Immunotherapy is a proven safe and effective therapeutic management option for AR but because it is more expensive and not available widely, it may be considered for patients who do not experience any improvement with appropriate pharmacotherapy [28].

Regarding referral to other physicians, 84.4% of all respondents refer patients to other specialists; there is no significant difference in the referral rates in both groups ($P = 0.295$). Among those who refer patients, the most common reason is the presence of uncontrolled symptoms (85.1%). Other reasons include the presence of complications (39.1%) and comorbidities (30.9%). It is reported that the practice of consultations and referrals to other specialists improves outcomes and quality of life among AR patients [29].

In conclusion, specialists and subspecialists in the Philippines are familiar with and use guidelines, primarily the ARIA, in the diagnosis and management of AR. Clinical history and physical examination are the cornerstone of diagnosis. The use of allergy testing is limited by the characteristics and coverage of the local healthcare system. Management practices are similar for both groups of physicians. Oral second-generation antihistamines

are the preferred choice for the treatment of intermittent AR. Intranasal steroids are the preferred therapy for persistent AR. Guideline recommendations, efficacy, cost, and availability are the drivers for choice of therapy. The recognition of the role of patient treatment preferences and allergen-specific immunotherapy remains to be a gap in the management of AR by Filipino physicians.

Despite logistical challenges like lack of electricity or intermittent internet connectivity in certain areas of the Philippines, this study shows that conducting a nationwide survey using online forms is feasible in developing countries with limited resource.

Conflicts of interest

The authors have no financial conflicts of interest.

Author contributions

The authors altogether collaborated in the conceptualization, development, writing, and editing of this paper. All authors report no significant conflict of interests related to this study.

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