AAAAI Work Group Report

Results From a National Survey of Asthma Provider Beliefs and Practices Regarding Exercise and Asthma: A Work Group Report of the AAAAI Committee on Sports, Exercise, and Fitness

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BACKGROUND: National Heart, Lung, and Blood Institute guidelines recommend regular physical activity (PA) for patients with asthma. Health care provider (HCP) counseling represents an effective approach to optimizing patient PA. However, current exercise rates among asthma patients are suboptimal, which suggests that counseling may be improved.
OBJECTIVE: To understand PA counseling behaviors among HCPs who manage asthma.
METHODS: A voluntary 36-item survey assessing self-reported awareness of PA recommendations and current clinical practices was sent to 979 randomly selected HCP members of the American Academy of Allergy, Asthma & Immunology (AAAAI).
RESULTS: The overall response rate was 9.3% (91 of 979). Respondents were physicians (100%) and allergists/immunologists (96%) who reported an average of 18.1 ± 12.3 years in independent practice. Over half (58%) reported personally engaging in 150 min/wk or more of moderate to strenuous PA. Eighty percent of participants were unaware of specific PA guidelines for patients with asthma, yet 66% acknowledged evidence for improved asthma outcomes with moderate exercise. A large majority of respondents believed that patients with asthma (97%) and severe asthma (84%) should pursue exercise. Whereas 90% of respondents support incorporating exercise counseling into asthma care, only 69% regularly counsel asthma patients about PA. Barriers cited included limited time, lack of knowledge regarding how and where to refer patients for exercise, and other medical priorities. Potential facilitators of PA included increasing practitioner education and patient-directed posters in waiting areas.
CONCLUSIONS: Health care providers recognized PA as an important component of asthma care but were often unaware of specific guidelines. Promoting PA counseling may require using a time-efficient approach to implement counseling at each asthma patient encounter. **© 2022 American Academy of Allergy, Asthma & Immunology (J Allergy Clin Immunol Pract 2022;10:1778-83)**

Key words: *Asthma; Exercise-induced bronchoconstriction; Physical activity; Exercise; Provider counseling*

INTRODUCTION

Physical activity (PA) has consistently been shown to be associated with asthma risk, but also to be safe in patients with asthma and improve asthma control and quality of life.[1-3] Evidence-based guidelines recommend that adults with asthma and other chronic illnesses (including cardiac disease, diabetes, and obesity) aim to achieve the national standards for PA: at least 150 min/wk of moderate-intensity aerobic PA.[4-9] In recent years, asthma-specific guidelines have begun including PA recommendations. Although the 2020 report of the National Asthma Education and Prevention Program did not directly address PA, the 2021 Global Initiative for Asthma guidelines advise that individuals with asthma be encouraged to engage in PA

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Abbreviations used
HCP- Health care provider
PA- Physical activity

regularly.[10,11] A recent American Academy of Allergy, Asthma, & Immunology (AAAAI) Work Group Report summarized the benefits to physical and psychological health that accompany PA interventions.[12] However, as noted in that report, adults with asthma engage in less PA than their non-asthma counterparts and are often hesitant to pursue exercise on their own.[13-15]

Health care providers (HCPs) are an expected and trusted source of behavior change advice.[16,17] Provider recommendations are effective in improving patient adherence to PA guidelines among adults with chronic diseases.[18] However, available evidence suggests that HCPs do not consistently counsel about PA although up to 90% of HCPs recognize the importance of PA counseling.[19-21] Similar results were found in a survey specific to asthma management. Primary care and asthma specialist providers in a single academic center acknowledged the importance of PA in patients with asthma (90%), but fewer than half discussed PA recommendations with those patients.[22] The low rates of PA counseling, particularly among asthma providers, requires further exploration.

Known barriers to HCP engagement in PA counseling include time, workload, a perceived lack of patient engagement, and knowledge of management options.[23-25] In addition to these, there are unique factors to consider in PA recommendations in adults with asthma. For example, over 90% of patients with asthma have exercise-induced bronchoconstriction, which requires HCPs to provide specific recommendations for managing asthma symptoms induced by exercise.[26] Overcoming these barriers is necessary to address the low rates of PA counseling among HCPs providing care to adults with asthma.

The aims of this study were to understand current self-reported PA counseling behaviors and to identify barriers and facilitators to PA counseling among a geographically diverse sample of subspecialty asthma providers across North America.

METHODS

We conducted a literature review to identify published manuscripts that addressed HCP counseling on PA promotion in ambulatory patients. Following an outline from a previously published manuscript, we developed questions to address providers' knowledge, beliefs, current clinical practice, and barriers or facilitators to related to PA counseling.[21] Three allergy/immunology providers with expertise in treating asthma worked collaboratively to generate questions consistent with current guidelines on asthma and PA. This process resulted in a 36-question survey. Of these, seven multiple choice questions focused on demographic characteristics. One dichotomous question assessed personal PA level, and another dichotomous question asked about awareness of PA guidelines for asthma. Provider attitudes toward PA among patients with asthma were assessed in five questions with responses on a 5-point Likert scale (strongly disagree to strongly agree). Knowledge regarding PA counseling was assessed in five questions with responses on a 5-point Likert scale (no knowledge to very knowledgeable). Barriers were measured in eight questions with a 5-point Likert scale (strongly disagree to strongly agree). Facilitators were measured in nine questions with a 5-point Likert scale (not at all helpful to very helpful). A behavioral scientist with measurement experience reviewed the questions for clarity, comprehension, and length. A modified set of 15 questions was pilot-tested for face and content validity by three HCPs.

Administrative staff within the AAAAI randomly selected a sample of 979 active HCP members of the AAAAI. E-mails were sent with a link to a Web-based survey platform (SurveyMonkey Inc., San Mateo, CA). E-mails with the survey link were sent two additional times to nonresponders. Survey responses were collected over a 4-week period in September and October 2019. No incentive was offered for participation. The University of Illinois at Chicago Institutional Review Board determined that the research was exempt from review because all data were deidentified.

Analyses

All surveys including deidentified demographic characteristics were downloaded into a Microsoft Excel document (version 16.5, Redmond, WA). Respondents were categorized based on predefined AAAAI geographic regions: Northeast (includes Connecticut, Massachusetts, Maine, New Hampshire, New York, Rhode Island, and Vermont), Mid-Atlantic (includes New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Ohio, and Washington, DC), Southeast (includes Alabama, Florida, Kentucky, Georgia, North Carolina, Tennessee, and South Carolina), Midwest (includes Iowa, Indiana, Illinois, North Dakota, Nebraska, Michigan, Montana, South Dakota, and Wisconsin), Mid-South (includes Arkansas, Kansas, Louisiana, Missouri, Mississippi, Oklahoma, and Texas), Rocky Mountain (includes Alaska, Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Wyoming, and Utah), Western (includes California, Oregon, Washington, and Hawaii), and Canada. Descriptive statistics were performed in Excel. Demographic characteristics between responders and nonresponders were explored using the t test for continuous variables and χ^2 test for categorical variables using SAS software (version 10, Cary, NC).

RESULTS

A total of 91 HCPs responded to the survey (9.3% response rate) after three e-mails were sent to nonresponders. No significant differences in age, sex, or geographic region of the United States were noted based on response status. Respondents were physicians (100%), predominantly allergists/immunologists (95.6%), and reported an average of 18.1 $\pm$ 12.3 years in independent practice. Average respondent age was 50.6 $\pm$ 11.8 years and 51.6% were male. Every geographic region of the United States was represented in the responses, and four participants were from Canada. Over half of respondents (58.4%) reported that they personally engaged in 150 min/wk or more of moderate to strenuous PA (Table I).

Almost all respondents said that patients with asthma (96.6%) or severe asthma (84.3%) should not avoid exercise. However, 79.6% of respondents were unaware of specific guidelines that supported a role for PA in conjunction with pharmacologic treatment for asthma. Whereas the large majority of respondents agreed or strongly agreed that exercise counseling should be provided to patients with asthma, only 68.5% reported that they currently provide exercise counseling in clinical practice (Figure 1).

Approximately a third of respondents considered themselves to be knowledgeable in counseling patients based on exercise guidelines, whereas 26.1% reported limited or no knowledge.

TABLE I. Demographics of survey participants

Demographic	Respondents, n (%)
Sex	
Men	47 (51.6)
Women	44 (48.4)
Profession	
Attending physician	91 (100)
Other (resident/fellow, nurse practitioner, physician assistant, etc)	0
Age, y	
30-40	20 (22.5)
41-50	30 (33.7)
51-60	12 (13.5)
61-70	24 (27)
>70	3 (3.4)
Subspecialty	
Allergy/immunology (A/I)	87 (95.6)
Pulmonary medicine	3 (3.3)
Both A/I and pulmonary	1 (1.1)
Patient population, by age	
Adult only	13 (14.3)
Pediatric only	7 (7.7)
Both adult and pediatric	71 (78)
Years in practice	
≤5	14 (15.4)
5-10	18 (19.8)
10-20	25 (27.5)
20-30	18 (19.8)
≥30	16 (17.6)
Geographic region of practice	
Northeast (Connecticut, Massachusetts, Maine, New Hampshire, New York, Rhode Island, and Vermont)	9 (10.1)
Mid-Atlantic (New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Ohio, and Washington, DC)	17 (19.1)
Southeast (Alabama, Florida, Kentucky, Georgia, North Carolina, Tennessee, and South Carolina)	16 (18.0)
Midwest (Iowa, Indiana, Illinois, North Dakota, Nebraska, Michigan, Montana, South Dakota, and Wisconsin)	19 (21.3)
Mid-South (Arkansas, Kansas, Louisiana, Missouri, Mississippi, Oklahoma, and Texas)	12 (13.5)
Rocky Mountain (Alaska, Arizona, Colorado, Idaho, Montana, New Mexico, Nevada, Wyoming, and Utah)	4 (4.5)
Western (California, Oregon, Washington, and Hawaii)	8 (8.9)
Canada	4 (4.5)
Currently engage in ≥150 min/wk of physical activity?	
Yes	52 (58.4)
No	37 (41.6)

The remainder were neutral. Only 18.2% of respondents were knowledgeable or very knowledgeable about identifying which patients should be referred to a supervised program. In addition, over half of respondents (61.4%) knew when to counsel patients about exercise but were unsure (43.2%) or had no knowledge (28.4%) about how to refer patients to a supervised exercise program when necessary. Only half of respondents (53.0%) reported knowing how to encourage patients to participate in exercise when appropriate (Figure 1).

Most respondents (72.8%) indicated that their training did not preclude them from discussing exercise, because they disagreed or strongly disagreed with the statement "My training does not qualify me to discuss exercise or refer to an exercise program." Almost all respondents (98.7%) said that exercise was relevant to their patient's respiratory symptoms.

Survey responses cited barriers to PA counseling, including limited time during patient visit (44.5%), lack of knowledge about how and where to refer patients for exercise (44.5%), and prioritizing other health behaviors (ie, weight loss, smoking cessation [29.6%]). Most respondents (62.9%) indicated that patients would be receptive to discussing either exercise or a referral to an exercise program. Other barriers that respondents listed included insurance coverage for exercise program (n = 4) and financial costs to an individual (eg, gym membership) (n = 2) (Figure 2).

Interventions that respondents deemed helpful to facilitate PA counseling included e-mails to practitioners containing written information about exercise in asthma (70.9%), a practitioner education session about exercise in patients with asthma (77.5%), an electronic/Web-based form or prescription pad with exercise referral information (57.5%), posters in waiting areas encouraging patients to ask about exercise (62.5%), and a patient handout with information on exercising with asthma (83.8%). Other facilitators included increased knowledge about available resources (n = 2) and assistance with discussing exercise referrals (eg, nurses, asthma educators, community centers/YMCA) (n = 3) (Figure 3).

Respondents thought that the most appropriate HCPs to address PA recommendations with patients were physicians (90%), followed by nurses (65%). Other responses promoted a range of professionals such as physiotherapists, occupational therapists, or kinesiologists, among others.

DISCUSSION

To our knowledge, this is the first survey exploring asthma provider beliefs and practices pertaining to PA in HCPs across North America. Results from a global survey published in 2014 included input from a small sample of US-based or Canadian allergist/immunologists (n = 45), but these North American

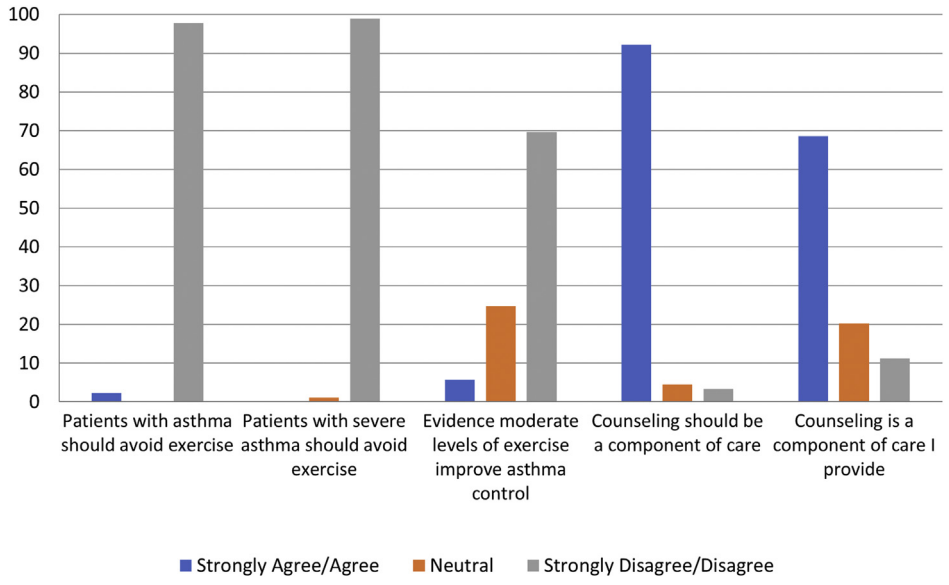

FIGURE 1. Percentage of respondents who agreed or disagreed with statements about physical activity and exercise counseling in patients with asthma (n = 81).

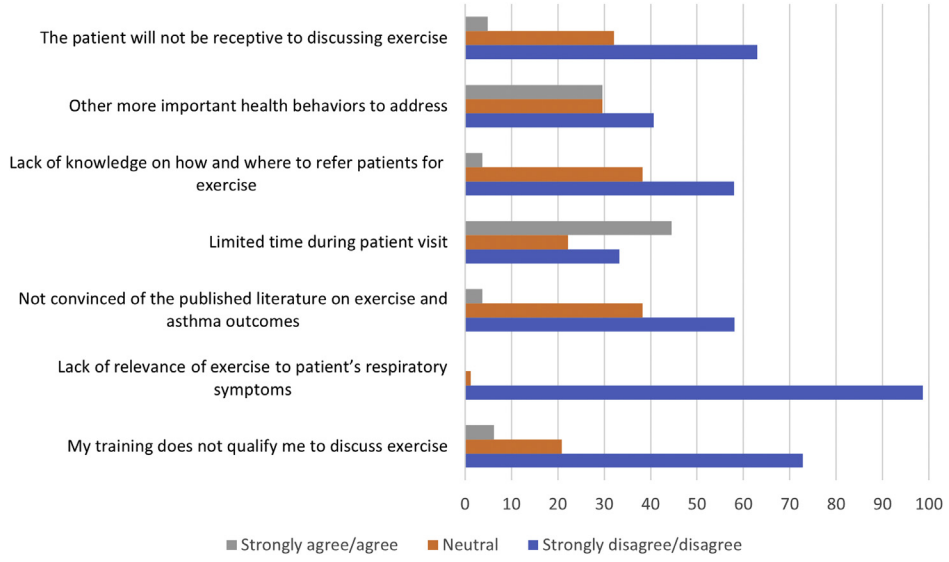

FIGURE 2. Respondents' beliefs about potential barriers to discussion about exercise or patient referral to an exercise program (n = 81).

responses were not reported or analyzed separately.[22] Despite being geographically limited to the United States and Canada, our survey sample of 91 asthma providers, all of whom were physicians, was diverse in terms of age, sex, and geographic region of the United States. Physicians of every age demographic were included in the sample. Responses were evenly divided between men and women and originated from every designated AAAAI geographic region.

From our findings, North American asthma providers generally recognized the positive effects of regular PA in patients with asthma; yet, compared with the global asthma survey, the respondents were less likely to report familiarity with evidence supporting PA in asthma (58% vs 85%).[22] More specifically, asthma providers in our study were unfamiliar with published guidelines on PA in asthma. Nearly 80% of respondents were unaware of guideline-based recommendations for engaging in PA. Without proper knowledge of current recommendations, HCPs are limited in the PA counseling they provide to patients. Additional training regarding evidence supporting PA is needed among HCPs and may need to be tailored for asthma providers in particular.

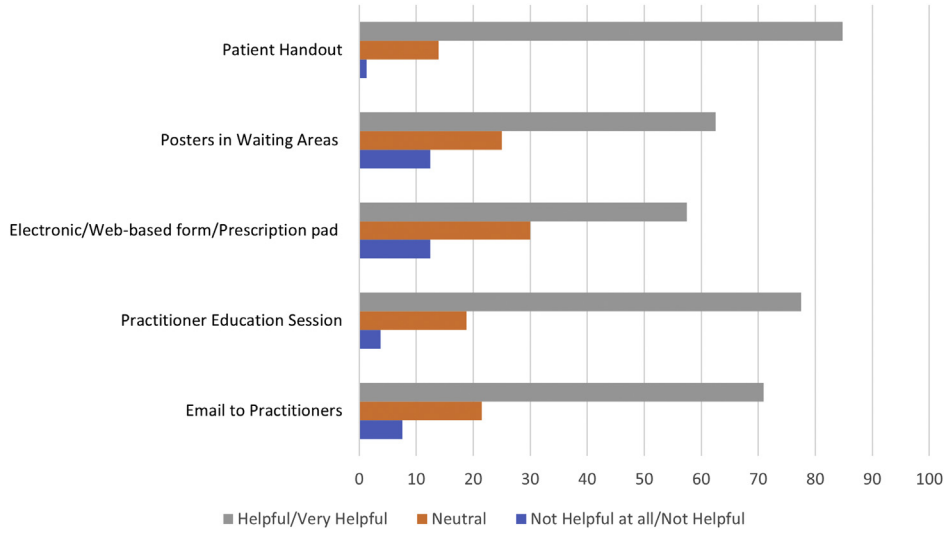

FIGURE 3. Respondents' beliefs about potential facilitators to discussion about exercise or patient referral to an exercise program (n = 81).

Despite physicians' academic background, only half of respondents thought that they could recognize when to refer patients to an exercise program. Asthma physicians may benefit from enhanced education about PA-based interventions appropriate for patients.[12,27,28]

Almost one-quarter of asthma physicians did not counsel about PA even though they believed that counseling should take place. The global asthma survey results suggested a similar proportion, based on 66.4% of clinicians saying they disagreed or strongly disagreed with the statement "I only discuss PA if the patient mentions it."[22] We suspect that clinical history-taking about PA has not been integrated into asthma follow-up visits to the same extent as other routine questioning (for instance, about medication adherence).

We found that time is a major barrier to delivery PA counseling. This is consistent with what has been found among primary care providers.[29] To address provider time limitations, the delivery of brief advice, which takes 30 seconds to 2 minutes, according to an ask, advise, assist (or act) framework, is recommended. Brief advice has been shown to be effective in encouraging smokers to access smoking cessation services and can be billed using Current Procedural Terminology codes for preventative counseling services (99401-99404).[30,31] However, trainers need to be educated and trained to deliver brief advice on increasing PA levels and billing for time spent for these preventative counseling services. Any discussion of PA will also be complicated by coexistent contributors to poor asthma outcomes. Many respondents identified the need to address other health behaviors, such as smoking cessation or weight loss, as a barrier to discussing PA. Patients who experience these comorbidities may see PA as a relatively less important topic for discussion. Indeed, counseling may not be appropriate at every visit. Nonetheless, asthma is a chronic disease that will allow providers to revisit the topic of PA periodically. Asthma providers may consider a multitude of factors, including cost to the practice, when choosing the counseling method most suitable to them. A low-intensity intervention such as a patient handout, which a large majority of surveyed providers viewed positively, may be ideal to many practices.

Other strategies were examined to promote implementing evidence-based approaches to PA counseling. The feasibility, adoptability, and enjoyment of any specific form of activity is likely to vary among individuals. Future research is needed to compare the PA preferences of the asthma patient population, as well as subpopulations. Other studies are warranted to compare the costs to asthma specialist practices of different patient education strategies. However, any HCP approach that promotes PA will generate more success than the complete absence of counseling, just as the pursuit of PA was found to be more important for improving asthma outcomes than the selection of any particular activity.[1] Activities ranging in both the intensity and level of personal investment required, from high-intensity interval training to swimming, walking, and gymnastics, have all been demonstrated to improve asthma outcomes.[26] We therefore believe that in the management of sedentary asthma patients, providers should recommend easily accessible, daily physical activities such as walking, rather than wait for an optimal PA intervention.

This study had some limitations. First, 91 respondents represents a relatively small sample of asthma providers. For added context, the average response rate for electronic surveys of AAAAI members is 13% (unpublished data, AAAAI). Ours was below this average and may indicate survey fatigue, which is only partially mitigated by the fact that each survey is sent to only 20% of members, considering that AAAAI members are likely to receive surveys from other professional organizations and their employers. Nonetheless, our sample more than doubles the prior published exercise survey sample size for North American allergist/immunologists. Considering the low response rate (91 out of 979), selection bias is likely despite randomization. Specifically, the survey was distributed to AAAAI members from several health care professions; however, 100% of respondents were physicians. Furthermore, most

survey respondents (58%) were themselves regular participants in PA, and therefore may have been more inclined to participate in this survey. Despite these limitations, these survey results provide unique insight into asthma providers' attitudes toward PA.

Conclusion

We surveyed US and Canadian asthma HCPs about their knowledge and behaviors pertaining to PA. Most of our survey cohort recognized PA as an important component of asthma care, but respondents were often unaware of specific guidelines. Optimizing PA counseling in the asthma provider office will help improve activity levels of patients with asthma, which can lead to improved patient outcomes. Achieving this may require interventions to implement counseling appropriately at each patient encounter as well as other time-efficient approaches.

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