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GERIATRICS

A qualitative investigation of the impact of asthma and self-management strategies among older adults

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ABSTRACT

Objective: We sought feedback from elderly patients living with asthma to understand their experience with assuming self-management roles for their asthma in order to inform the design and implementation of a primary care-based strategy that could best support their asthma control. **Methods:** We held six focus groups with a total of 31 English- and Spanish-speaking older adults with a current diagnosis of asthma. Focus groups addressed the effect of asthma on patients' lives and self-management strategies. Transcripts were analyzed using constant comparative techniques. **Results:** Asthma exerted a consistent effect on patients' physical and psychological well-being. Common barriers to self-care included misuse of controller medications and uncertainty whether shortness of breath, fatigue, and cough were due to their asthma or some other chronic illness. Patients developed coping strategies to continue with daily activities even when experiencing symptoms, but did not recognize attainable asthma quality of life. **Conclusions:** Asthma had a distinct impact on elderly adults' quality of life; due to their longstanding history with this condition, many patients had accepted these symptoms as a "new normal." Developing strategies to reorient patients' perceptions of the possibilities for managing their illness will be critical to the success of asthma self-management support programs specific to older adults.

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Introduction

Older adults with asthma experience greater challenges in achieving and maintaining asthma control compared with their younger counterparts [1, 2]. Although long-term physiological changes to the lung and immune system contribute to poorer asthma outcomes among older adults [3], the quality of medical care received and an individual's ability to effectively manage chronic illness also play an important role [4–6]. To the latter, according to the National Asthma Education and Prevention Program (NAEPP) guidelines, achieving asthma control requires patients to be responsible for engaging in self-care behaviors, monitoring symptoms, and actively engaging with the clinical support team [7].

Assuming a patient role in the context of an often symptomatic chronic illness such as asthma can be challenging for an elderly individual. Older adults are more likely to contend with multiple chronic conditions [8]; therefore, prioritizing and performing asthma self-care

tasks may be influenced by one's perceived need and urgency to manage a competing condition. The higher prevalence of multi-morbidity among older adults also presents the older patient with greater self-management complexity than younger patients, requiring formidable competencies to sustain multiple health behaviors. Further complicating adherence with these behaviors is that older adults are also experiencing age-related changes that can compromise their cognitive and physical resources [9, 10]. The consequences are clear; previous research has found that 9 to 40% of older adults with asthma were adherent to their asthma controller medication [2, 11], and fewer than half demonstrated accurate technique in using a meter dose or dry powder inhaler [2].

Self-management support, one component of the Chronic Care Model (CCM), posits that patients are vital in maintaining personal health and function; self-management support programs seek to promote an individual's skills and confidence in managing chronic conditions [12]. Although there is an abundance of

self-management support programs available, few have been tailored to the unique needs of older adults with asthma [3, 13]. We sought feedback from elderly patients living with asthma to gain explicit insight into their experience with assuming self-management roles for their asthma in order to inform the design and implementation of a primary care-based strategy that could best support their asthma control.

Methods

Study participants

Patients were recruited from one academic medical center and one federally qualified health center, both in New York City, New York. Patients were eligible if they: 1) were ages 50 years and older, 2) spoke English or Spanish, and 3) had a current diagnosis of asthma. We excluded patients with a diagnosis of chronic obstructive pulmonary disease (COPD) or other chronic respiratory diseases, or had ≥ 15 pack-year smoking history to reduce the likelihood of undiagnosed COPD. A list of patients meeting eligibility criteria was generated via electronic medical records and a research assistant contacted potentially eligible patients by telephone to confirm eligibility and obtain consent for their participation in the study. Interested and eligible participants were scheduled for a focus group at their respective institution on available dates. The study was approved by the Institutional Review Boards of the Icahn School of Medicine at Mount Sinai, the Institute for Family Health, and Northwestern University Feinberg School of Medicine.

Focus group design

The focus group guide was designed by a team of experts ($n = 7$) in asthma, health education and promotion, and primary care. The questions were based on scientific literature reporting barriers to asthma self-management and specific process questions related to the proposed program design. Topics addressed four domains: effect of asthma on the patient's life, self-management strategies, patient-centered outcomes, and feedback on intervention design and delivery. The questions were open-ended and included a variety of prompts to stimulate conversation on each topic.

Focus groups procedure

We held six focus groups with a total of 31 participants between April and October 2014. Each focus group lasted approximately 90 minutes and was led by one of two focus group moderators (AF, MM). Each focus group was recorded and transcribed verbatim by an independent

professional transcription service. Additionally, a research assistant took notes during the focus group to capture details that might not be accessible on the recordings, such as participant expressions or mood of the group.

Analysis

The six focus group transcripts were reviewed by a team of 3 coders (RO, AF, MG). Content and constant comparative analyses were used to identify themes [14]. Each coder independently reviewed the first two focus group transcripts to determine preliminary categories of responses. The coders then met to discuss individual codes and compare differences. After discussion, the preliminary response categories were refined into a coding scheme. After repeated meetings, a final set of codes was determined. Once consensus was reached, the final coding scheme was applied to the remaining transcripts. When new categories were identified in the remaining transcripts, the coding team met to discuss new findings and a consensus was reached prior to adding to the coding scheme. These activities occurred in an iterative fashion. No further focus groups were held after thematic saturation was achieved. All qualitative coding was done using NVivo Version 10 (QSR).

Results

The mean age of the patient sample was 67.7 (± 7.0) years; the majority of patients were female (87%) and non-White (Hispanic, 68%; non-Hispanic Black 10%). The majority of patients had a high school education or less (66.7%) and 63% had a monthly income of less than \$1350. Patients had been diagnosed with asthma for an average of 29.6 (± 17.4) years. Patient focus groups revealed three overarching themes about their experience with asthma:

Theme 1: Physical and psychological effects of asthma

An initial theme that quickly arose in discussions was how asthma affected patients' physical and psychological well-being (Table 1). Throughout the focus groups, patients frequently described the physical symptoms they experienced, in particular, shortness of breath, chest tightness, wheezing and fatigue. Due to the persistence of these symptoms patients emphasized the relentlessness of their condition; as described by one patient "out of 7 days a week, maybe four or five I get asthma." Asthma also impacted patients' emotional well-being with reports of worrying about their asthma and fears of being without their rescue medicine, exposure to triggers, or having another asthma attack. Many patients, even when they were not experiencing symptoms, reported anxiety about

Table 1. Quotes regarding physical and psychological effects of asthma.

Asthma's effect on patients' lives	Patient quote
Relentlessness of condition	• "Out of seven days a week, maybe four or five I get asthma" • "Well I have asthma 24 hours a day"
Emotional impact	• "It worries me because I am not the same person as before ...when I'm by myself and I think about that I get a little bit worried because I say, 'Oh, my goodness, how ...' Like you say, 'How did your life change with the asthma?' Is like completely - - I am another person, not like before we didn't worry about anything." • "I think the worst thing is probably the fear, you know I feel like what if I get caught someplace and I don't have enough spray." • "I think I have a more fearful of it, 'cause I had a number of attacks in my house, and I'm also alone. So I'm very fearful that they're gonna find me on the floor or something"
Lifestyle limitations	• "When you get asthma you can't do nothing." • "I can't even dance and I used to love to dance." • "It really interferes with my day-to-day living." • "I took lots of breaks, say sometimes when I had to go to the drug store, and I would sit here for a while, and sit there on you know little stools as I went by, and it was very hard, you couldn't just walk, you know normal, until you really got it together." • "When it's very cold and very hot, I'm not going out. That's it, that's it, I ain't going out."

the anticipation of another attack. "The worst thing is the fear, you know I feel like, what if I get caught someplace and I don't have enough spray?"

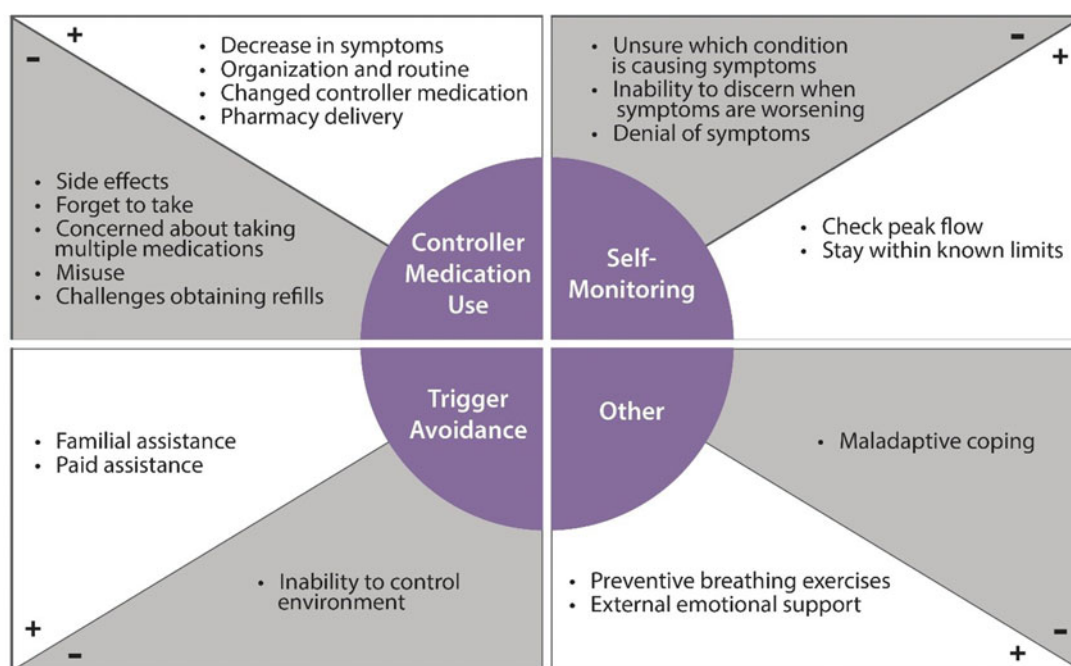
Patients reported frequent lifestyle limitations as a result of their asthma such as a limited ability to do daily tasks or housework, inability to have pets or engage in formerly enjoyable social activities, such as dancing or sports, in an effort to avoid possible triggers. Lastly, they reported restricted freedom of movements due to their asthma, such as the inability to leave their home, especially during extreme weather. Some stated that they purposely avoided locations where they might encounter a trigger, while others stated that they needed to modify activities that required physical exertion.

Theme 2: Patient's self-management strategies: Barriers and facilitators

Patients identified four general self-management strategies: use of asthma controller medications, self-monitoring of symptoms, avoidance of triggers, and miscellaneous other strategies. We identified facilitators and barriers to executing these self-management strategies (Figure 1).

Controller medication use

Patients reported a range of factors that facilitated their use of asthma controller medications (Table 2). Most often, patients experienced a decrease in asthma symptoms as a result of consistent use, which in turn promoted continued use. Additional facilitating strategies included creating a reminder system or routine to take their

**Figure 1.** Barriers and facilitators to patient asthma self-management.

Note. + = facilitating factors to asthma self-management; - = barriers to asthma self-management.

Table 2. Barriers and facilitators to asthma controller medication use.

Facilitator	Patient quote	Barrier	Patient quote
Experience a decrease in symptoms	"I've been using the Advair, which I use two times a day, no matter what. I always try to use it, and that's been a great help for me. I haven't felt wheezing. I don't feel that short of breath anymore. I mean it's been like a miracle, with the Advair I feel great."	Experience side effects from controller medication	"Advair, I was using it, but I stopped using cause by the time it got to control it, it give me a lot of pain on one of my lungs, so I stopped using it."
Organization and routine surrounding controller medication	"I have a calendar on the wall that my kids gave me. They mark that I need to take the medicine and put the calendar on my refrigerator. I need to mark it every day"	Forget to take controller medication	"I forget to do it, you know before I leave, then I get the tightness when I'm walking. Cause I take it different times. Sometimes I'm in a rush to go out to the store, cause I don't like the crowds, you know, with the shopping cart, so I try to make it early in the morning, and I rush out of the house, and I don't take it"
Modified controller medication based on patient experience	"My doctor always suggest something, you know she'll always suggest something different, 'well, why don't you try this, and if it doesn't work let's see what we can do about this,' when I was getting it bad, but once she changed me from Flovent to the Azmacort, the best thing I ever took."	Concerned about taking multiple medications	"I just don't like to take them all at once."
Pharmacy delivers	"The pharmacy delivers"	Difficulty obtaining refills	"I do everything the doctor tells me to do, what my children ask me to do. I take every medication like I'm supposed to, but every six months I have two to three months waiting to get all the medications back."
		Misuse controller medication	"My asthma is acute, it's not chronic. I don't have to take medicine every day"

medications and using the pharmacy home delivery service for ease of obtaining refills. Some patients reported working with their provider to find an asthma controller medicine that they preferred and did not have as many side effects, resulting in improved satisfaction and adherence. Barriers to the use of controller medications included fear of or experience with side effects. Many patients were also concerned about taking multiple medications for multiple conditions at the same time, prompting them to space out their medications, often resulting in an irregular medication schedule. Similarly, an additional barrier included forgetting to take medications. Patients also misunderstood the directions for use of the controller medication. During the focus group discussion, it became clear that some patients misunderstood that controller medications should be taken daily, even when they were not experiencing

symptoms and that they will likely take these medications indefinitely.

Self-monitoring

Self-monitoring was another patient-reported strategy (Table 3). Facilitators of active self-monitoring included checking peak flow to assess symptoms and determine changes in asthma control. Additionally, patients reported staying within their known limits and not exerting themselves in a manner that would bring on asthma symptoms. One challenge to self-monitoring is the uncertainty about whether shortness of breath, fatigue, or cough was due to asthma or some other chronic illness. One patient also reported being unable to discern when her asthma symptoms are worsening and received no warning signs before an asthma attack, "I worry because it is silent, suddenly I

Table 3. Barriers and facilitators to self-monitoring asthma symptoms.

Facilitator	Patient quote	Barrier	Patient quote
Check peak flow	"I'll use [PFM] if my chest is tight to see how tight it is. And then I use the pump, and after I use it, I use it again to see if it's not that tight, and if I see it goes up, then I know I'm doing okay. If it stays that way, then I take myself to the hospital."	Unsure which condition is causing symptoms	"Going up the stairs, it's a little hard, but I don't know if it's asthma or old age." "And for me it's a little complicated, because I'm not sure what symptoms are for what. I had three heart attacks, I'm a diabetic, so I'm not sure"
Stay within known limits	"Know your limitations. Learn to know what you can and cannot do, and stay away from what you can't do"	Inability to discern when symptoms are worsening	"I feel fine then I suddenly get an attack and I can't breathe. So, I worry because it is silent, suddenly I feel suffocated. I worry because I don't feel symptoms to warn me. It's not like hers where I can't go up and down stairs, I can go up and downstairs, go around in the car, run, go here, go there, and all the activities of the day. Then at the end of that day, I had an attack."

feel suffocated. I worry because I don't feel symptoms to warn me."

Trigger avoidance

Patients often reported seeking ways to avoid triggers. Facilitators of trigger avoidance included familial and paid assistance, such as help with household cleaning or carrying groceries up stairs. One patient stated, "If I go food shopping I have to bring somebody to carry my bags, 'cause I can't." Barriers to trigger avoidance included an inability to always control the environment, especially avoiding cigarette smoke outdoors. One patient lamented "you can't even stand by the bus stop anymore, you have to move, 'cause there are about three or four people smoking. And that hits you."

Other self-management strategies

Patients reported various other self-management strategies, including that they did not let their asthma get in their way by continuing to carry out daily activities, even after experiencing a bad asthma attack or the possibility of another one. "I go out and walk two blocks and I feel like I'm suffocating and like my chest is tight and I have to stop. But you know how they say, you're not going to control me, I'm going to control you." Participants described this strategy in a positive manner; however, we classified it as a barrier to engaging in self-care and classified as a theme of maladaptive coping as patients did not seek to minimize the symptoms they experienced. As a precautionary measure, patients reported having multiple rescue inhalers throughout their home and never leaving their home without their inhaler. A patient commented, "my pump is like the American Express card, 'never leave home without it.'"

Some patients reported engaging in preventive breathing exercises, "the yoga breathing, I find it very helpful." Additionally, many patients commented that their family provided them with emotional support. One woman stated, "My daughter always asks me if I am alright."

Theme 3: Patient's misperception of asthma control

During the focus groups, patients reported well-controlled asthma, yet also indicated daily rescue inhaler use or frequent emergency healthcare utilization (an indication of poor asthma control). This contradiction suggests that patients misperceive their level of asthma control. This misperception was further highlighted when the moderator asked one patient about the frequency by which she used her rescue inhaler, and the patient responded, "Very rarely, sometimes once a day. Sometimes I don't use it a whole day." The patient did not recognize that daily albuterol use was indicative of

poor control. Consistent with this perception, a theme of marginalized expectations of health status was identified. Patients had accepted a level of shortness of breath or restricted freedom of movement as a result of asthma and did not recognize the potential quality of life he or she could achieve with greater asthma control.

Discussion

We sought to better understand elderly patients' strategies to manage asthma to further guide the development of a primary-care self-management support program for older adults with asthma. Our sample included urban-dwelling, older individuals who on average have contended with the condition for several decades. Consistent with previous research, we found that asthma had a distinct impact on elderly adults' quality of daily life and perceived ability to perform necessary self-care tasks [15], further highlighting the need for such self-management support programs. We also found that many patients had accepted these symptoms as a "new normal," which may present challenges to engaging older patients in self-management support programs. A summary of recommended components of a self-management support program for older adults with asthma is provided in Table 4.

Older adults with asthma described both barriers and facilitators to engaging in asthma self-care behaviors. We found that patients engage in a variety of unique strategies to manage their controller medication, self-monitor symptoms, and avoid asthma triggers. Some of these approaches were reported to be successful for facilitating asthma control, and others presented further barriers. For instance, confusion regarding the frequency with which controller medications should be used was common, indicating a need for patient reorientation regarding medication use. Among patients who reported

Table 4. Summary of key self-management support components for older adults with asthma.

Component
• Address fear and anxiety associated with asthma by including modules to promote a sense of calm such as breathing activities, mindfulness or meditation. • Increase confidence in managing asthma exacerbations through skills training and simulations. • Provide actionable information on asthma controller medications including their indication (purpose), benefits and side effects, and demonstrate proper use. • Seek to consolidate patients' entire medication schedules (asthma and non-asthma medications). • Reframe patients' expectations of attainable quality of life by explaining how proper self-management behaviors can improve one's current health status. • Address all self-management behavior needs, including those linked to other chronic conditions that the patient may or may not be able to differentiate in their daily self-care roles.

experiencing a decrease in symptoms due to consistent controller medication use also reported greater adherence. Patients also experienced side effects from their controller medications, suggesting a need for closer physician supervision and the consideration of alternative treatments.

Multi-morbidity and age added additional complexity in engaging in self-care behaviors. Self-monitoring, specific to the elderly, in conjunction with other health problems presented additional challenges for patients to discern the root cause of symptoms and as a result complicated patients' abilities to appropriately respond. Additionally, many patients were concerned about taking multiple medications at one time, highlighting the need again for increased provider engagement, whether it be a physician, nurse or pharmacist, to help optimize patients' medication schedules and provide clarity when medications can be taken together.

We found that older adults commonly did not recognize the possibility of living without the asthma symptoms they frequently experienced. Due to the persistence of their condition throughout their lifetimes, patients developed makeshift coping strategies to continue with their daily activities, even when experiencing constant asthma symptoms. Yet, patients may not recognize the potential quality of life that could be obtained with better asthma control. Given this finding and the fact that they commonly misperceived the severity of their asthma, patients may not acknowledge certain symptoms they are experiencing even if clinicians were to inquire. This is consistent with a study from Australia [16] where older adults with asthma reported 'you learn to live with it,' indicative of a mind-over-matter approach to controlling asthma symptoms. These authors reported that once individuals accepted the presence of symptoms as a 'new normal,' this may impact their conscious recognition of symptoms and may serve as an obstacle to effective medical care. Although challenging due to limited patient-provider communication [17, 18], older adults require reorientation regarding the potentially attainable quality of life they might achieve with better asthma control. Therein the challenge is to find ways to further engage medical practices to work with longstanding patients to recognize potentially attainable quality of life.

Asthma also has a long lasting psychological impact on older adults. Physical symptoms, such as shortness of breath and wheezing were commonly acknowledged, but many patients also reported experiencing emotional turmoil as a result of their asthma. In our sample, older patients had managed their asthma for an average of 30 years, during which they had experienced multiple asthma exacerbations. The memory of these experiences and the possibility of recurrence can be quite

frightening. Self-management support programs specific to older adults with asthma should incorporate aspects to help patients manage their fear and anxiety associated with asthma, and components to promote a sense of calm, by incorporating breathing activities, mindfulness or meditation. Moreover, self-management support programs could seek to impart a sense of control for these patients who have self-identified a sense of helplessness with regard to their self-management capacity.

Based on patient reported barriers to engaging in proper self-management behaviors, core components of an intervention for older adults should include education regarding different types of asthma medications (controllers versus rescue) and the frequency of symptoms they should expect to experience if their asthma is well controlled. In addition, based on the patient-reported challenges in managing multiple conditions, self-management support programs should include both asthma-specific and general self-management behaviors. For example, for patients who struggle with remembering to take their medicine, the asthma coach can help patients create a routine to take all their medications together at one time. Additionally, repeated follow-up is crucial due to the long-standing history of the condition.

The results of our focus groups should be seen in the context of several limitations. We used nonprobability sampling methods and therefore we are unable to determine the extent which our sample represents the entire population. Our sample consisted of an urban population and therefore these findings may not be generalizable to other settings. The majority of patients were women; however, this is consistent with demographics of elderly asthmatics [19, 20].

Conclusion

In conclusion, asthma impacts older adults' physical and emotional well-being further highlighting the need for such self-management support programs. We found that older adults with asthma may misattribute their asthma symptoms and misperceive the severity of their asthma, which may hinder their ability to effectively manage their condition. Older adults with asthma engage in a range of self-management behaviors, some of which facilitate achieving asthma control, while others serve as a barrier. In the development of self-management support programs specific to older adults with asthma, it is important to recognize that older adults require a different approach than young adults, as they have lived with their condition for an extensive period of time and developed management strategies, some of which may not be improving asthma outcomes. Asthma management and self-management are often inadequately prioritized despite

the varied and meaningful impact that it has on the lives of older adults. Developing strategies to reorient patients' perceptions of the possibilities for managing their illness will be critical to the success of asthma self-management support programs specific to older adults.

Declaration of interest

No conflicts of interest exist for the following authors: Rachel O'Connor, Melissa Martynenko, Monica Gagnon, Diane Hauser, Edwin Young, Joseph Lurio, Michael S. Wolf, or Alex D. Federman. Juan P. Wisnivesky is a member of the research board of EHE International, has received consulting fees from Merck, UBS and IMS Health, and was awarded a research grant from GlaxoSmithKline to conduct a COPD study. The content is solely the responsibility of the authors and does not necessarily represent the official view of the Patient Centered Outcomes Research Institute.

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References

1. Talreja N, Baptist AP. Effect of age on asthma control: results from the National Asthma Survey. *Ann Allergy Asthma Immunol* 2011;106:24–29.
2. Federman AD, Wolf MS, Sofianou A, Martynenko M, O'Connor R, Halm EA, et al. Self-management behaviors in older adults with asthma: associations with health literacy. *J Am Geriatr Soc* 2014;62:872–879.
3. Gibson PG, McDonald VM, Marks GB. Asthma in older adults. *Lancet* 2010;376:803–813.
4. Wu AW, Young Y, Skinner EA, Diette GB, Huber M, Peres A, et al. Quality of care and outcomes of adults with asthma treated by specialists and generalists in managed care. *Arch Intern Med* 2001;161:2554–2560.
5. Dales RE, Kerr PE, Schweitzer I, Reesor K, Gougeon L, Dickinson G. Asthma management preceding an emergency department visit. *Arch Intern Med* 1992;152:2041–2044.
6. Dales R, Schweitzer I, Kerr P, Gougeon L, Rivington R, Draper J. Risk factors for recurrent emergency department visits for asthma. *Thorax* 1995;50:520–524.
7. Expert Panel Report 3 (EPR-3): Guidelines for the Diagnosis and Management of Asthma-Summary Report 2007. *J Allergy Clin Immunol* 2007;120:S94–138.
8. Gerteis J, Izrael D, Deitz D, LeRoy L, Ricciardi R, Miller T, et al. Multiple Chronic Conditions Chartbook. AHRQ Publications No. Q14-0038. Rockville, MD: Agency for Healthcare Research and Quality; 2014.
9. Park DC, Lautenschlager G, Hedden T, Davidson NS, Smith AD, Smith PK. Models of visuospatial and verbal memory across the adult life span. *Psychol Aging* 2002;17:299–320.
10. Holmes J, Powell-Griner E, Lethbridge-Cejku M, Heyman K. Aging differently: Physical limitations among adults aged 50 years and over: United States, 2001–2007. Hyattsville, MD: NCHS Data Brief; 2009:1.
11. Bozek A, Jarzab J. Adherence to asthma therapy in elderly patients. *J Asthma* 2010;47:162–165.
12. Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A. Improving chronic illness care: translating evidence into action. *Health Aff* 2001;20:64–78.
13. Hanania NA, King MJ, Braman SS, Saltoun C, Wise RA, Enright P, et al. Asthma in the elderly: Current understanding and future research needs—a report of a National Institute on Aging (NIA) workshop. *J Allergy Clin Immunol* 2011;128:S4–S24.
14. Strauss A, Corbin JM. Grounded Theory in Practice. Thousand Oaks, CA: Sage; 1997.
15. Baptist AP, Deol BBK, Reddy RC, Nelson B, Clark NM. Age-specific factors influencing asthma management by older adults. *Qual Health Res* 2010;20:117–124.
16. Goeman DP, O'Hehir RE, Jenkins C, Scharf SL, Douglass JA. 'You have to learn to live with it': a qualitative and quantitative study of older people with asthma. *Clin Resp J* 2007;1:99–105.
17. Stevenson FA, Cox K, Britten N, Dundar Y. A systematic review of the research on communication between patients and health care professionals about medicines: the consequences for concordance. *Health Expect* 2004;7:235–245.
18. Makoul G, Arntson P, Schofield T. Health promotion in primary care: physician-patient communication and decision making about prescription medications. *Soc Sci Med* 1995;41:1241–1254.
19. Akinbami OJ, Moorman JE, Liu X. Asthma prevalence, health care use, and mortality: United States, 2005–2009: US Department of Health and Human Services, Centers for Disease Control and Prevention. Hyattsville, MD: National Center for Health Statistics; 2011.
20. Burrows B, Barbee R, Cline M, Knudson R, Lebowitz M. Characteristics of asthma among elderly adults in a sample of the general population. *Chest* 1991;100:935–942.