Title: The health care utilisation and out-of-pocket expenditure associated with asthma amongst a sample of Australian women aged over 45 years: analysis from the '45 and up' Study

Running head: Health care use and spending by women with asthma

Keywords: economic analysis, health services, self-care, complementary medicine, allied health

ABSTRACT

Objective: This study aims to describe the prevalence of health care utilisation (including conventional medicine, self-care and complementary medicine treatments) for the management of asthma by women aged 45 years and over and their associated out-of-pocket expenditure. **Methods**: A self-reported mail survey of 375 Australian women, a cohort of the national 45 and Up Study, reporting a clinical diagnosis of asthma. The women were asked about their use of health care resources including conventional medicine, complementary medicine, and self-prescribed treatments for asthma and their associated out-of-pocket spending. Spearman's correlation coefficient, student's t-test and chi-square test were used as appropriate. Population level costs were created by extrapolating the costs reported by participants by available national prevalence data. **Results**: Survey respondents (N=375; response rate, 46.9%) were, on average, 67.0 years old (min 53, max 91). The majority (69.1%; n=259) consulted at least one health care practitioner in the previous 12 months for their asthma. Most of the participants (n= 247; 65.9%) reported using at least one prescription medication for asthma in the previous 12 months. The total out-of-pocket expenditure on asthma treatment for Australian women aged 50 years and over is estimated to be AU$159 million per annum. **Conclusions**: The breadth of conventional and complementary medicine health care services reported in this study, as well as the range of treatments that patients self-prescribe, highlights the challenges of coordinating care for individuals living with asthma.

INTRODUCTION

Asthma is a chronic respiratory disorder characterised by periodic episodes of (mostly) reversible airway obstruction and subsequent wheezing, shortness of breath, cough and/or chest tightness (1). In 2015, 358.2 million individuals worldwide were affected by asthma (2) (a prevalence constituting an increase of 12.6% since 1990), which is projected to rise to 400 million cases by 2025 (3). The highest rate of doctor-diagnosed asthma is reported in Australia, with a prevalence rate of 21%, compared with 4.3% globally (4). Although the prevalence of asthma among Australians aged 45 years and over is 10.3% (5), this rate is still more than double the global prevalence.

There is considerable burden associated with asthma. The global burden of disease study reported that 26.2 million disability-adjusted life years were attributed to asthma in 2015, which represents 1.1% of total disease burden worldwide (2). The financial burden associated with asthma is also high, including direct health care expenditure and costs attributed to absenteeism and mortality. In the United States (US), the total cost of asthma was estimated at US$81.9 billion in 2013 (6), and in Australia at AU$27.9 billion in 2015 (7).

As there is no cure for asthma, most clinical guidelines tend to focus on the maintenance of good symptomatic control as the primary goal of asthma management (8, 9). In conventional medicine, treatment primarily focuses on risk minimisation (e.g. reducing exposure to known risk factors) and pharmacological management. Using a stepwise approach, an individual's treatment will vary depending on the severity of symptoms; ranging from the use of short acting beta agonists for mild, intermittent and persistent asthma, to the use of inhaled/oral corticosteroids and/or long acting beta agonists for more severe and persistent asthma (8-10). More recently, monoclonal antibody-based biologics have been shown to be effective for

managing asthma that is unresponsive to other treatments (11). While most available asthma treatments are reported to be effective in controlling asthma symptoms (based on the findings of high quality systematic reviews), long-term safety data and evidence of efficacy in adults aged 45 years and over is lacking (11). In the absence of strong clinical data, effective asthma management in adults aged 45 years and over relies heavily on coordinated, person-centred care to ensure patients are receiving safe and appropriate clinical management (12).

In addition to evidence gaps regarding effective asthma treatments for adults aged 45 years and over, adherence to prescribed treatments also poses a challenge to the effective management of the condition (13). Data from a qualitative investigation of 25 Australian patients with severe asthma identified side effects, perceived low efficacy and cost of asthma treatment as key drivers of low adherence to asthma treatment (14). Consistent with this finding, other Australian research focusing on adults in their 60s found perceived or experienced side effects from asthma medication to be particularly influential in treatment adherence for this population (12). These same factors may also explain why some people seek other treatment options to improve their asthma symptoms, such as complementary medicine (CM) (15, 16).

Based on the findings of a systematic review of 72 international studies, the prevalence of CM use among individuals with asthma may be as high 100% in adults (17), with level of use directly related to the severity of the asthma (18). The therapies most frequently used were found to be CM products (comprising herbal medicines and nutritional supplements) and mind-body techniques (including meditation, tai chi and yoga). For most of these treatments, evidence of efficacy is either insufficient or absent (17, 19, 20). However, some treatments including massage therapy (20), the Buteyko breathing technique (21) and *Boswellia serrata*

(22) do show promise in improving outcomes such as lung function and bronchodilator use. Notwithstanding, it is unclear to what extent individuals with asthma use these potentially more promising CM treatments over less evidence-based CM treatments, and whether individuals use CM in conjunction with, or as a replacement for, conventional medicine or self-care treatments.

In response to this knowledge gap, we present the findings from the first known study to report on the prevalence of health care utilisation (including conventional medicine, self-care and complementary medicine treatments) and associated out-of-pocket expenditure for the management of asthma in women aged 45 years and over.

METHODS

Aim

This study aims to describe the prevalence of health care utilization and associated out-of-pocket expenditure for the management of asthma in women aged 45 years and over. It also aims to examine any associations between the time since diagnosis and self-reported asthma severity with consultation rates, prescription medicine use, complementary medicine product and practice use, and out-of-pocket expenses.

Design

Secondary analysis of data from an ancillary study of the 45 and Up Study.

Data source

The 45 and Up Study is the largest study of healthy ageing conducted in the Southern Hemisphere. The 45 and Up Study is described in detail elsewhere (23); but is briefly outlined below.

Sample

Men and women residing in New South Wales, Australia and aged 45 years and above were randomly selected from the Medicare Australia database—a government-administered database that provides virtually complete coverage of the general population—and invited to participate in the 45 and Up Study. Participants (N=266,848) entered the study by completing a baseline postal questionnaire and providing written consent to have their health followed over time. For the ancillary study reported here, 800 women who indicated that they had been diagnosed as having asthma by a doctor were mailed a questionnaire between August and November 2016.

Outcomes

Demographic characteristics

The participants were asked a number of questions regarding demographic characteristics, including their: date of birth, highest completed educational qualification, marital status, whether they had private health insurance, and their ability to manage on their income (i.e. no or little difficulty, some difficulties, struggled). In addition, area of residence was assigned according to the Accessibility Remoteness Index of Australia Plus score for each participant's postcode (i.e. major city, inner regional area, outer regional or remote area) (Australian Institute of Health and Welfare 2004).

Health care utilisation

The women were asked to indicate (yes/no) if they consulted any of the following health care practitioners for their asthma in the previous 12 months: conventional medical practitioners (including general practitioner, medical specialist, hospital doctor); allied health practitioners (including nurse, pharmacist/chemist, counsellor, psychologist, dietitian, physiotherapist, occupational therapist); and CM practitioners (including acupuncturist, chiropractor, naturopath/herbalist, homeopath, massage therapist, meditation instructor, yoga instructor, nutritionist, osteopath, traditional Chinese medicine practitioner, and an 'other' CM practitioner option). Participants were also asked how many times they consulted each practitioner type in the previous 12 months (i.e. 1 or 2, 3 - 6, or 7 or more).

The women were further provided with a list of CM products/practices (i.e. aromatherapy oils, herbal medicines, multivitamins, cod liver oil, fish oil, homeopathic remedies, meditation without an instructor, yoga without an instructor, physical activities/exercises, and two open-text options for participants to list 'other' CM products/practices options) and asked if they used any of these during the previous 12 months. There were three response options: *At least once daily, At least weekly*, and *At least monthly*. In addition, the women were asked to list (open text response) any prescription medications they had used for their asthma during the previous 12 months.

With regard to the above health care options for asthma, the women were asked to indicate the total expenditure (i.e. out-of-pocket costs) attributed to medical/allied health practitioner consultations, CM practitioner consultations, CM product and practice purchases, and prescription medication use, over the 12-month period. There were five response options for each type of expense (1 = *Up to $100*, 2 = *$100 - $499*, 3 = *$500 - $999*, 4 = *$1,000 – $1,400*, 5 = *$1,500*).

Asthma status

The women were asked to rate the severity of their asthma during the previous 12 months, on a 10-point scale ranging from 0 (least severe) to 10 (most severe). The women were also asked to specify the time (years/months) since they were first diagnosed with asthma.

Statistical analyses

Due to the data being non-normally distributed, Spearman's correlation coefficients were used to examine the association between two continuous variables (e.g. determine the correlation between the 12-month and 4-week self-rated severity of asthma). Student's t-tests were used to make comparisons between continuous and categorical variables (e.g. average number of consultations or average cost vs years since diagnosis or severity of asthma). When the data were considered non-normally distributed, two-sample Wilcoxon rank-sum tests were used to make comparisons between continuous and categorical variables (e.g. to compare the difference in costs between years since diagnosis or severity of asthma). Chi-square tests were used to examine the association between two categorical variables (e.g. use of prescription medicines or complementary medicine products and practices vs years since diagnosis or severity of asthma). The financial costings of population level out-of-pocket direct health care expenditure were based on 2016 Australian population census figures for women aged 50 years and over (n=4,165,907) (24) and asthma prevalence data as reported by the Australian Institute of Health and Welfare (10.8%; 449,918) (5, 24). These figures were then extrapolated from the average individual out-of-pocket expenditure identified through calculation of the mean. All costings were reported in Australian dollars. All analyses were conducted using the statistical software Stata, version 14.

Ethics approval

The University of NSW Human Research Ethics Committee approved the baseline 45 and Up study and the ancillary study reported on in this paper. The University of Technology Sydney Human Research Ethics Committee also approved the sub-study in accordance with the Declaration of Helsinki.

RESULTS

Demographic characteristics

The survey was returned by 375 women (response rate = 46.9%). The average age of the women was 67.0 (SD=8.8) years, with a minimum age of 53 years and a maximum age of 91 years. Almost half of the women (45.6%) resided in an inner regional area, 42.6% resided in a major city, and 11.8% resided in an outer regional or remote area. The majority of the women (65.1%) were married or in a *de facto* relationship, with 26.8% widowed, divorced or separated, and 8.1% single. In terms of ability to manage on available income, 68.9% had no or little difficulty, 20.6% had some difficulties, and 10.5% had struggles. The majority of the women (72.6%) had private health insurance. A university degree was attained by 34.0% of the women, while 33.0% gained a certificate or diploma, 26.8% a high school education, and 6.2% had no formal education.

Asthma characteristics

In terms of self-rated severity of asthma (out of 10; with 10 being most severe), the average severity rating for the women was 2.8 (SD=1.9) over the past 12 months and 2.7 (SD=2.2) over the past 4 weeks; noting that the 12-month and 4-week self-rated severity of asthma were highly correlated ($\rho=0.68$, $p<0.001$). The average time since the first clinical diagnosis of asthma was 32.6 (SD=19.8) years.

Consultations with health care practitioners

The majority of the women (69.1%; n=259) consulted at least one health care practitioner in the previous 12 months for their asthma. Specifically, 67.2% (n=252) consulted a doctor, 20.8% (n=78) consulted an allied health practitioner, and 9.6% (n=36) consulted a CM practitioner. Of the women that consulted a CM practitioner, 5 consulted a CM practitioner only, and 31 consulted both a CM practitioner and a doctor. Of the women that consulted an allied health practitioner, 2 consulted an allied health practitioner only, and 76 consulted both an allied health practitioner and a doctor.

Table 1 shows the consultations with health care practitioners by years since diagnosis of asthma and severity of asthma over the past 12 months. Women who rated their severity of asthma as being 5 or more points (out of 10) had a greater number of consultations with health care practitioners, specifically doctors ($p<0.001$) and allied health practitioners ($p<0.001$), compared to women who rated their severity of asthma as less than 5 points. Overall, the women had on average 3.8 consultations with health care practitioners in the previous 12 months specifically for their asthma.

Use of prescription medications

The use of prescription medications for asthma by years since diagnosis of asthma and severity of asthma over the past 12 months is presented in Table 2. Three categories of prescription medications were determined based on the information provided by the women: 1) bronchodilators (such as Salbutamol, Vilanterol and Formoterol); 2) inhaled or systemic steroidal anti-inflammatory drugs (such as Budesonide and Prednisone); and 3) 'other'

prescription medications (including antibiotics [such as Amoxycillin] and leukotriene receptor antagonist drugs [such as Montelukast]).

The majority of the participants (n=247; 65.9%) reported using at least one type of prescription medication for asthma in the previous 12 months. A greater percentage of women who rated their severity of asthma as being 5 or more points (out of 10) used bronchodilators (83.6%) (p<0.001, χ^2=12.657), steroidal anti-inflammatory drugs (59.0%) (p=0.004, χ^2=8.251), and/or other prescription medications (14.8%) (p<0.001, χ^2=13.737), compared to women who rated their severity of asthma as being less than 5 points (59.6%, 34.5%, and 3.3% respectively). There were no statistically significant associations between use of any prescription medication and years since diagnosis.

Use of CM products and practices

Table 3 shows the use of CM products and practices by years since diagnosis of asthma and severity of asthma over the past 12 months. There was no statistically significant associations between number of different CM products and practices used for asthma and years since diagnosis with asthma (p=0.194, χ^2=4.719), nor severity of asthma (p=0.706, χ^2=1.398).

Out-of-pocket expenses

The out-of-pocket expenses by years since diagnosis of asthma and severity of asthma over the past 12 months are presented in Table 4. Women who rated their severity of asthma as being 5 or more (out of 10) reported higher out-of-pocket expenditure with regards to their consultations with doctors and allied health practitioners (p=0.002, z=-3.098), and their use of prescription medications (p<0.001, z=-4.610), compared to women who rated their severity of asthma as being less than 5 points. There were no statistically significant differences in

out-of-pocket expenditure between women who had been diagnosed with asthma for less than 10 years and those who had been diagnosed with asthma 10 or more years previously, in terms of expenditure on consultations with doctors or allied health practitioners, prescription medications, CM practitioner consultations, or CM products and practices.

On average, the combined out-of-pocket expenditure for asthma-associated health care (based on participant self-report) was AU$354.0 per annum, per participant. Extrapolating from available national figures, and assuming an average individual out-of-pocket expenditure in line with that of the women from this study (AU$354.0), we estimate the total out-of-pocket expenditure on asthma treatment for Australian women aged 50 years and over to be approximately AU$159 million per annum. Of this total, AU$60M of expenditure can be attributed to prescription medications, AU$47M for consultations with doctors, AU$34M for CM products/practices and AU$18M for consultations with CM practitioners.

DISCUSSION

Our study provides the first analysis of *both* conventional and CM health care utilisation (including consultations with health providers as well as self-care practices and product use) for asthma amongst Australian women aged 53 to 91 years. The study findings highlight the key role of health professionals in asthma management with over two thirds of women consulting with at least one health care practitioner for their asthma in the previous 12 months. However, as under-treatment of asthma is an identified issue in Australians in their 50s and 60s (12), the lack of engagement with a health professional for the remaining women in our study is an important finding that may present problems for the ongoing management of asthma among these women.

While our data indicate that the majority of participating women consulted a doctor for their asthma care, a large number interacted with an allied health or CM practitioner in addition to their doctor. We also found that a positive association between self-rated severity of asthma illness and number of consultations with doctors and allied health professionals (but not CM practitioners). These findings contradict those of a US study, which found CM use to be higher among adults with more severe asthma (evidenced by emergency room visits or asthma-associated disability days) (18). It is possible that these contrasting findings could be reflective of the different health funding arrangements in the two countries. For example, individuals with severe asthma in Australia may prefer to access public-funded conventional health services over CM healthcare options in order to reduce out-of-pocket healthcare costs, whereas those in the US may choose to prioritise CM services/treatments for their asthma in an attempt to minimise out-of-pocket expenditure on conventional healthcare services/treatments (25, 26). This incongruence between study findings may also relate to differences in how asthma severity is measured.

The findings of our study may allay concerns that CM users with asthma are at risk of missing out on appropriate care (27), instead suggesting that CM may be used by older women to support mild or chronic asthma symptoms while conventional treatments are prioritised for severe asthma episodes. Irrespective of severity, the range of health professionals potentially providing care to the same individual for the same condition, as reported in our study, emphasises the importance of effective coordination of care across all members of the healthcare team. Current data suggests one in five Australians aged 65 years and older currently experience problems with the coordination of care received between doctors and allied health practitioners (28). In addition, CM care currently exists outside of the lens of mainstream health service provision in Australia (29). Consequently, mechanisms

to ensure appropriate coordination of health care require urgent consideration from researchers and policy makers to ensure safe, effective, coordinated patient management for those with asthma.

Our study also found more than one in three women used some form of CM product or practice to assist the management of their asthma. However, neither severity of illness nor years since diagnosis were associated with CM use in this population. Similarly, the proportion of women using a CM product or practice was nearly four times greater than the proportion of those who reported visiting a CM practitioner - suggesting that CM use was either self-prescribed or recommended under the direction of a medical doctor or allied health professional. A previous study of CM use for chronic disease (30) reported a much lower rate of CM use (11-12%) among adult Australian women with asthma. However, the definition of CM in this previous study was restricted to vitamins/minerals or herbal products only, whereas the definition employed in our study encompassed a much broader range of CM services and products.

The efficacy of CM treatments for asthma is limited at best; although, some evidence supports the use of massage therapy (20), the Buteyko breathing technique (21) and the Ayurvedic herbal medicine *Boswellia serrata* (22). An expert review on asthma in adults aged between 50 and 70 years identified a number of factors affecting the applicability of the available evidence for this population, such as the use of restrictive RCT designs that exclude older patients or those with comorbidities (11) – features that may also compromise the value of research conducted on CM products and treatments. As such, the body of evidence for asthma management in older adults is insufficient for delivering evidence-based care to this population, whether that be using conventional medicine or CM treatments. The high rate of

CM use identified in our study suggests that the low evidence-base for CM did not deter participants from using these services/treatments to assist with asthma management. This is consistent with evidence from epidemiological research indicating that older adults with asthma tend to deviate from current recommended guidelines for asthma care (13). In addition, men and women in their 50s and 60s with asthma often have heightened concerns regarding the side-effects of pharmaceutical asthma treatments, and furthermore, are more likely to be non-adherent to prescribed treatment if they experience side-effects (12).

On average, annual out-of-pocket expenditure for asthma-associated health care was AU$354 per participant, which equates to approximately AU$159 million per annum for Australian women aged 50 years or over. While this out-of-pocket cost was directly related to women's self-rated asthma severity, it was not linked to time since diagnosis. Cost of care can be a significant barrier to access for older people. A global survey in 11 countries found 8% of Australians aged 65 years or over forgo access to health care (e.g. doctor visits, medical tests, filling a prescription, skipping doses) due to cost (28). Contrary to previous prevalence studies in the general population, Australian adults with chronic disease (including asthma) have been found to be more likely to use CM if they are in the lower income quintiles (30). This aligns with US research findings that show individuals reporting financial barriers to asthma care were more likely to use CM (18). Given the significant subsidies to asthma medication and primary care in Australia and the absence of such subsidies for the majority of CM services, products and treatments, the impact of financial drivers for CM use in this population warrants closer examination.

The findings from this analysis need to be interpreted with caution. While the research draws upon a robust and internationally-recognised study sample, the cross-sectional study design

does limit the ability to determine causality between variables. Second, the 45 and Up cohort is, by definition, restricted to a specified age range. As such, the results from this study may only represent women aged 45 years and older and should not be generalised to women from younger age groups or to men. The economic cost calculations reported in this study do not indicate the overall individual or societal burden of asthma nor provide comparative data on the cost-benefit or cost-effectiveness of different treatments. Instead our data only quantifies the direct financial out-of-pocket costs associated with health care and must be interpreted within the constraints of these boundaries. More detailed economic analyses are needed to provide richer context to our study findings. The severity of asthma was measured using an instrument that, while widely utilised in asthma research, is not a validated scale. As such, the internal validity of the data pertaining to asthma severity must be carefully considered. Finally, the survey data were collected via self-report and this may have introduced recall bias. Despite these limitations, this study is the first to explore health service utilisation for asthma in this population, and given the issues surrounding clinical evidence for asthma care in people aged 45 and older, may direct important future research and policy discussions on this topic.

CONCLUSIONS

Our study reports for the first time, the prevalence and estimated expenditure across all sectors of health care utilisation (i.e. conventional and complementary medicine practitioner care, and conventional medicine and CM self-care practices and products) amongst a sample of older women with asthma. Given the considerable expenditure on CM services/products, it is imperative that further work seek to establish the evidence-base of different CM treatments used for the management of asthma. Moreover, the breadth of health care services used across the conventional and complementary medicine sectors, as well as the range of treatments that patients self-prescribe, highlights the need for, but also the challenges of,

coordinating care for individuals living with asthma. At the very least, the findings allude to

the importance of conventional, complementary and allied health care providers initiating

conversations with their patients about the use of other medical/allied/CM interventions for

their asthma to ensure patients are receiving safe, effective and coordinated care.

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Table 1 Consultations with health care practitioners by years since diagnosis of asthma and severity of asthma over the past 12 months.

Asthma Characteristics			Average Number of Consultations			
			Doctor	Allied Health Practitioner	CM Practitioner	Total
			Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Years Since	<10 years	(n=40)	2.5 (3.1)	0.9 (3.2)	0.7 (3.2)	4.1 (6.7)
Diagnosis	≥10 years	(n=323)	2.0 (2.6)	1.1 (3.3)	0.8 (3.4)	3.8 (7.2)
	p-value		0.246	0.733	0.897	0.835
	t		1.162	-0.342	-0.129	0.209
Severity of	<5 points	(n=307)	1.5 (1.9)	0.7 (2.5)	0.7 (3.0)	2.9 (5.1)
Asthma [†]	≥5 points	(n=61)	4.3 (4.2)	2.9 (5.4)	1.1 (4.9)	8.3 (12.4)
	p-value		<0.001	<0.001	0.387	<0.001
	t		-8.212	-4.981	-0.866	-5.641
Total Sample		(n=375)	2.0(2.6)	1.0(3.2)	0.7(3.4)	3.8(7.1)

[†] Self-rated severity score out of 10 (1=least severe and 10=most severe)

Table 2 Use of prescription medications by years since diagnosis of asthma and severity of asthma over the past 12 months, with figures presented being row percentages.

Asthma Characteristics			Prescription Medication		
			Bronchodilators [A]	Steroidal anti-inflammatory [B]	Other prescription medications [C]
			Yes (n=235)	Yes (n=205)	Yes (n=19)
Years Since Diagnosis	<10 years	(n=40)	60.0%	37.5%	5.0%
	≥10 years	(n=323)	64.4%	38.4%	5.3%
	p-value		0.585	0.557	0.944
	χ^2		0.298	0.345	0.005
Severity of Asthma [†]	<5 points	(n=307)	59.6%	34.5%	3.3%
	≥5 points	(n=61)	83.6%	59.0%	14.8%
	p-value		<0.001	0.004	<0.001
	χ^2		12.657	8.251	13.737

[A] bronchodilators such as Salbutamol, Vilanterol and Formoterol (included 73 women who took the combined bronchodilator and steroidal anti-inflammatory drug Seretide).

[B] steroidal anti-inflammatory drugs such as Cortisone, Symbicort and Prednisone (included 73 women who took the combined bronchodilator and steroidal anti-inflammatory drug Seretide).

[C] antibiotics such as Amoxycillin and leukotriene receptor antagonist drugs such as Singulair.

[†] self-rated severity score out of 10 (1=least severe and 10=most severe)

Table 3 Use of complementary medicine products and practices by years since diagnosis of asthma and severity of asthma over the past 12 months, with figures presented being row percentages.

Asthma Characteristics			Number of Different Complementary Medicine Products and Practices Used				p-value	χ^2
			None	1	2	3 or more		
			(n=229)	(n=53)	(n=31)	(n=50)		
Years Since Diagnosis	<10 years	(n=40)	47.5%	20.0%	12.5%	20.0%	0.194	4.719
	≥10 years	(n=323)	65.0%	13.9%	8.1%	13.0%		
Severity of Asthma [†]	<5 points	(n=307)	63.8%	14.7%	8.8%	12.7%	0.706	1.398
	≥5 points	(n=61)	59.0%	13.1%	9.9%	18.0%		

† Self-rated severity score out of 10 (1=least severe and 10=most severe)

Table 4 Out-of-Pocket expenses by years since diagnosis of asthma and severity of asthma over the past 12 months.

Asthma Characteristics			Average Cost				
			Doctor / Allied Health Practitioner	CM Practitioner	Prescription Medications	CM Products and Practices	Total
			Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Years Since Diagnosis	<10 years	(n=40)	$108.8 (246.5)	$46.3 (206.1)	$110.0 (127.7)	$92.5 (223.2)	$357.5 (448.9)
	≥10 years	(n=323)	$105.6 (230.3)	$41.6 (190.9)	$137.9 (212.4)	$77.4 (209.7)	$362.5 (620.8)
	p-value		0.468	0.526	0.938	0.919	0.627
	z		0.726	-0.635	-0.078	0.101	0.486
Severity of Asthma †	<5 points	(n=307)	$80.9 (178.3)	$38.4 (184.5)	$114.7 (179.6)	$64.3 (174.5)	$298.4 (467.9)
	≥5 points	(n=61)	$226.2 (380.1)	$58.2 (222.5)	$232.8 (279.3)	$147.5 (328.4)	$664.8 (987.2)
	p-value		0.002	0.502	<0.001	0.129	<0.001
	z		-3.098	-0.672	-4.610	-1.516	-3.959
Total Sample		(n=375)	$103.9 (228.8)	$40.9 (189.4)	$132.5 (202.9)	$76.7 (208.0)	$354.0 (596.7)

† Self-rated severity score out of 10 (1=least severe and 10=most severe)