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ASTHMA INHALERS AND OTHER TREATMENTS: DOES THEY CAUSE ADDICTION OR WORSEN THE DISEASE CONDITION

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ABSTRACT

Objective: This research aims to determine the asthma inhalers and other treatments, such as whether they cause addiction or worsen the disease condition.

Methods: The study will be conducted in outpatient respiratory clinics across several hospitals in [insert location]. These clinics provide care for patients with asthma, making them ideal settings for recruiting participants and collecting relevant data.

Results: The study included 450 participants. The most frequent gender among them was male (n= 282, 62.6%) and female (n= 168, 37.3%). The most frequent age among study participants was 36-40 years (n= 155, 34.4%), followed by 31-35 years (n= 102, 22.7%) then 40 years and more (n=84, 18.7%), 25-30 years (n=72, 16%), and less than 25 years (n=37, 8.2%). The most frequent nationalities among study participants were Saudi (n= 372, 82.6%) and non-Saudi (n= 78, 17.3%). The participants were asked, "Are you an asthma patient?" and the responses were as follows: yes (n=318, 70.7%) and no (n=132, 29.3%). Asthma patients among the participants were asked whether they could control the disease, and the responses were as follows: controlled (n=257, 57.1) and uncontrolled (n=61, 13.6%). Asthma treatment for the participants used was SABA (n=220, 69%), followed by LABA (n=75, 24%), oral medications (n=19,6%), and others (n=4,1%).

Conclusion:

The study highlighted significant findings regarding the use of asthma inhalers and treatments. While most participants reported controlled asthma symptoms, a portion expressed concerns about dependency, long-term side effects, and reduced inhaler effectiveness over time. These results

underscore the importance of patient education, regular treatment reassessments, and addressing psychological aspects of inhaler use.

INTRODUCTION

Asthma and COPD are only two of several lung diseases that must be well managed with the use of respiratory inhalers [1-2]. They work by delivering the medicine to the respiratory system, where it may have an immediate impact on the lungs while reducing the drug's systemic exposure. The drug can't alleviate the pathophysiology of the condition, including inflammation or bronchoconstriction, unless the inhaler is used well. The beneficial benefits of inhalers, however, are rendered useless when they are used improperly, a phenomenon known as inhaler abuse.

Patients and the healthcare system are both affected by inhaler usage. Reduced illness control and quality of life, more visits to hospitals and emergency rooms, and more healthcare expenditures are all outcomes [3-5].Misuse of inhalers accounts for a significant chunk of the $50 billion spent on these devices each year for respiratory ailments, costing an estimated $7–15 billion [6]. Beyond these aggregate inhaler estimates, nearly 50% of adult patients and 33% of children with asthma in Australia show cost-related nonadherence (CRNA) [7]. There was a correlation between adherence and financial results in a meta-analysis of CRNA in COPD patients [8-10].

While these medications are highly effective in controlling asthma symptoms, there is growing speculation that frequent or prolonged use may lead to dependence or even contribute to the worsening of the disease. Understanding whether asthma treatments have unintended consequences is crucial for optimizing patient care and ensuring that therapies improve, rather than compromise, long-term respiratory health. This study aims to assess whether the use of asthma inhalers and other treatments causes addiction or worsens asthma conditions over time.

METHODS

Study design

This study will employ a cross-sectional design to investigate whether the use of asthma inhalers and other treatments causes addiction or worsens the disease condition. The study will utilize both quantitative and qualitative data collection methods to provide a comprehensive analysis of patient experiences and outcomes.

Study approach

The study will be conducted in outpatient respiratory clinics across several hospitals in [insert location]. These clinics provide care for patients with asthma, making them ideal settings for recruiting participants and collecting relevant data.

Study population

The target population for this study will include adult asthma patients aged 18 years and older who have been using asthma inhalers or other treatments for at least six months. Both male and female patients will be included in the study to ensure a diverse sample.

Study sample

A sample size of [450] participants will be selected using a purposive sampling technique. This method will allow for the selection of patients with a range of asthma severities and treatment histories, ensuring that the study captures a variety of experiences with inhaler use and other treatments.

Study tool

For the current study, the questionnaire was adopted for data collection, which was also categorized as a study tool.

Data collection

Data will be collected through a structured questionnaire that assesses medication usage patterns, potential signs of addiction, asthma symptom control, and patient-reported outcomes. In addition, qualitative interviews will be conducted with a subset of participants to gather in-depth insights into their experiences with asthma treatments.

Data analysis

Quantitative data will be analyzed using descriptive and inferential statistics, such as frequency distributions, chi-square tests, and regression analysis, to identify correlations between inhaler use, dependency, and asthma symptom control. Qualitative data from the interviews will be transcribed and analyzed thematically to identify recurring themes related to addiction, worsening conditions, and patient experiences.

Ethical considerations

The study will receive ethical approval from [insert ethics board]. Informed consent will be obtained from all participants before data collection, and confidentiality will be maintained throughout the study. Participants will be informed of their right to withdraw from the study at any time without affecting their care. All collected data will be anonymized and securely stored to protect participant privacy.

RESULTS

The study included 450 participants. The most frequent gender among them was male (n= 282, 62.6%) and female (n= 168, 37.3%). Figure 1 shows the gender distribution among study participants. The most frequent age among study participants was 36-40 years (n= 155, 34.4%), followed by 31-35 years (n= 102, 22.7%) then 40 years and more (n=84, 18.7%), 25-30 years (n=72, 16%), and less than 25 years (n=37, 8.2%). Figure 2 shows the age distribution among study participants. The most frequent nationalities among study participants were Saudi (n= 372, 82.6%) and non-Saudi (n= 78, 17.3%). Figure 3 shows the distribution of nationality among study participants.

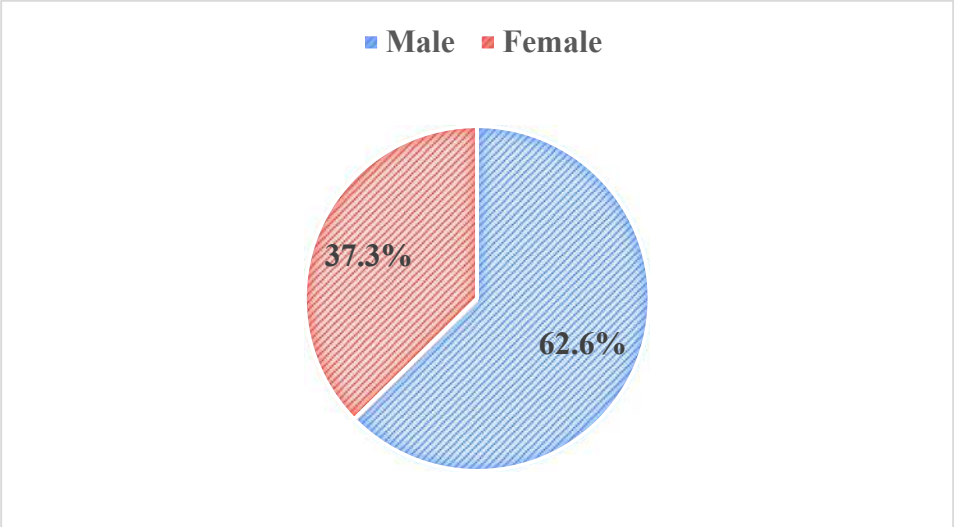

Figure 1: Gender distribution among study participants

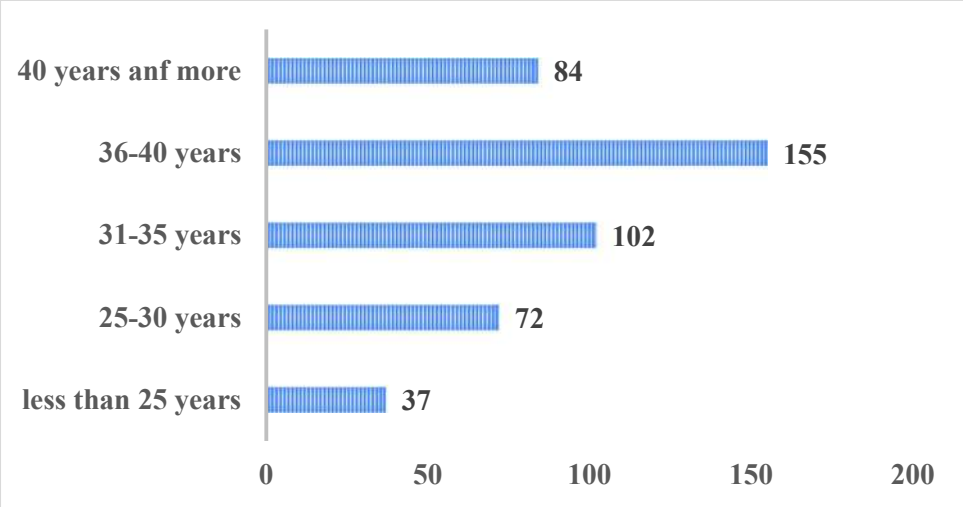

Figure 2: Age distribution among study participants

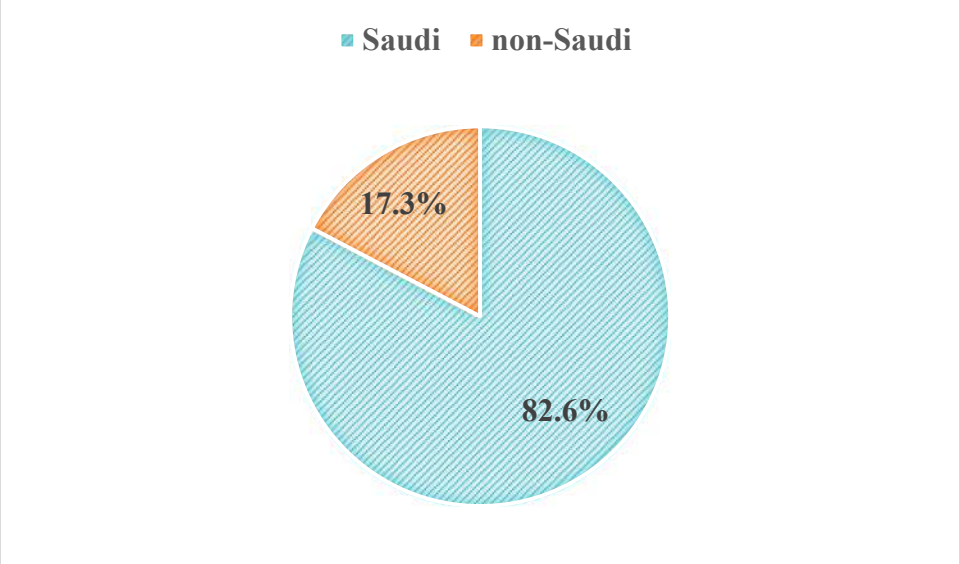

Figure 3: Nationality distribution among study participants

The participants were asked, "Are you an asthma patient?" and the responses were as follows: yes (n=318, 70.7%) and no (n=132, 29.3%). Figure 4 shows the percentage of the asthma distribution among study participants.

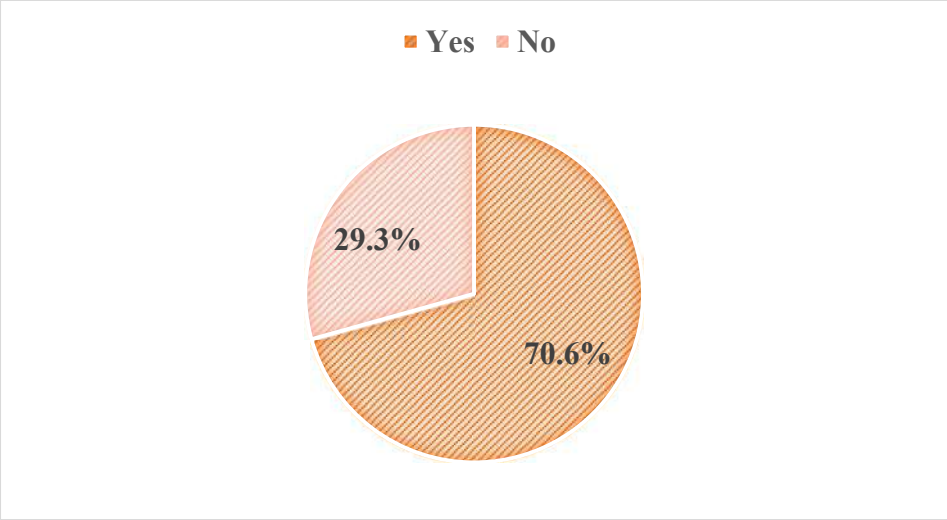

Figure 4: Asthma distribution among study participants

Participants were asked their opinions on the following statements. Their responses and results are presented in Table 1.

Table 1: opinions on the following statements about asthma

Survey item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I feel that I rely too much on my asthma inhaler.	124 39.0%	100 31.4%	27 8.5%	42 13.2%	25 7.9%
I experience withdrawal-like symptoms when I do not use my inhaler.	114 35.8%	87 27.4%	55 17.3%	40 12.6%	22 6.9%
I have become anxious when I forget my inhaler or am unable to access it.	42 13.2%	61 19.2%	93 29.2%	75 23.6%	47 14.8%
Over time, I have needed to increase my use of the inhaler to control my asthma symptoms.	55 17.3%	25 7.9%	69 21.7%	61 19.2%	108 34.0%
I sometimes use my inhaler even when I don't feel a need for it.	157 49.4%	90 28.3%	41 12.9%	14 4.4%	16 5.0%
Using my inhaler has helped to significantly improve my asthma condition.	14 4.4%	19 6.0%	23 7.2%	113 35.5%	149 46.9%
I feel that my asthma symptoms are getting worse despite regular inhaler use.	120 37.7%	94 29.6%	57 17.9%	21 6.6%	26 8.2%
I believe my asthma would worsen if I stopped using the inhaler regularly.	54 17.0%	65 20.4%	98 30.8%	51 16.0%	50 15.7%
I think I am dependent on my asthma treatments to manage my symptoms.	24 7.5%	27 8.5%	72 22.6%	80 25.2%	115 36.2%

I am concerned that long-term use of asthma medications may negatively impact my health.	15 4.7%	18 5.7%	48 15.1%	110 34.6%	127 39.9%
I have experienced side effects from my asthma treatments that worry me.	113 35.5%	109 34.3%	35 11.0%	33 10.4%	28 8.8%
I feel that my inhaler is less effective now than when I first started using it.	27 8.5%	21 6.6%	45 14.2%	86 27.0%	139 43.7%
I believe my inhaler usage has become habitual, even when I do not have severe symptoms.	26 8.2%	30 9.4%	32 10.1%	82 25.8%	148 46.5%
I trust that my current asthma treatment plan is the best option for controlling my asthma.	6 1.9%	22 6.9%	34 10.7%	78 24.5%	178 56.0%
I fear that over-reliance on inhalers could eventually worsen my overall respiratory health.	17 5.3%	35 11.0%	54 17.0%	97 30.5%	115 36.2%

Asthma patients among the participants were asked whether they could control the disease, and the responses were as follows: controlled (n=257, 57.1) and uncontrolled (n=61, 13.6%).
Asthma treatment for the participants used was SABA (n=220, 69%), followed by LABA (n=75, 24%), oral medications (n=19,6%), and others (n=4,1%).

DISCUSSION

The abuse of respiratory inhalers for different pulmonary illnesses has been extensively documented in the literature. Fifty percent to eighty percent or more of asthma and COPD patients, according to research, do not know how to use their inhaler properly [9]. The majority of healthcare providers (between 69 and 70 percent) are unable to explain or demonstrate how to use an inhaler correctly. Therefore, inhaler abuse is not limited to patients alone [10].
It is worth mentioning that the detection of inhaler usage has not been restricted to certain pharmaceutical kinds or devices, healthcare facilities, or demographics. While most research on inhaler usage has focused on metered dosage inhalers (MDIs), reports of high rates of misuse across all inhaler types have been documented [11, 12]. The high incidence of inhaler usage has been supported by studies conducted in both inpatient and outpatient settings [11,13]. Additionally, inhaler usage is common across all age groups, according to studies in both adults and children [11,14–15]. Lastly, there is evidence that minority and low-income individuals have asthma and chronic obstructive pulmonary disease (COPD) at disproportionate rates, and this disparity may extend to inhaler usage [16]. In addition, there is evidence that certain demographics are more likely to abuse inhalers than others. These include those who are older, female, use multiple devices, have never received inhaler training, have a low or average opinion of their own technique, use home oxygen, and have a low bronchodilator responsiveness, among other things [17–21].
In spite of these alarmingly high rates of inhaler usage, there has been no discernible decline in this issue over the last many decades, suggesting that it is still very much a problem [12,22]. Due to the widespread nature of the problem, it is essential to investigate the causes and potential remedies for inhaler abuse in various demographics and contexts.

Reasons for inhaler misuse: Socio-ecological framework

Extensive research spanning decades has shown many aspects linked to the abuse of inhalers. The elements that have direct impacts on inhaler abuse are the primary focus of this review, whereas those that have indirect effects are not. Poor inhaler technique might be caused by any condition that makes it harder to take medicine as prescribed.

Using ecological models, we may classify the elements that contribute to inhaler abuse into relevant domains. With the person nestled in the center, the zones of impact stretch from environmental to population level. Ecological models illustrate the interaction between levels and how each level impacts people and their health habits. Individual (or patient), interpersonal, organizational/institutional, and policy levels of impact seem to be particularly pertinent to inhaler usage from an ecological standpoint. Patient inhaler technique may be influenced by factors at several levels, which can interact with one another. In this part, we will define and explain each component; in the parts that follow, we will discuss both existing and prospective solutions.

Individual

Most patients self-administer their inhaled drugs, thus there are a number of characteristics at the patient level that may lead to inhaler abuse. These include health literacy, knowledge, attitude, competence, and self-efficacy.

Proper technique requires knowledge, which is described as the patient understanding how to use each of their inhaler devices as recommended. Patients may not know how to properly use an inhaler for a variety of reasons. To start, they may not have ever had instruction on how to properly use an inhaler. Take audiotaped juvenile asthma visits as an example; over 95% of doctors failed to evaluate the patient's inhaler technique or show the patient how to use an MDI correctly [23]. Despite recommendations from national guidelines to evaluate inhaler technique at every asthma appointment, this is not happening [1]. Second, the instruction on how to use an inhaler may have been incorrect. Up to 90% of healthcare workers do not know how to use an inhaler correctly, according to a systematic study [10]. It is very doubtful that practitioners could instruct patients on appropriate inhaler technique if they are unable to show it themselves. Additionally, there is a possibility of contradictory information due to the fact that children and parents may obtain instruction from a variety of sources, some of which may not be qualified to teach proper inhaler technique [24]. Thirdly, patients' understanding of proper technique sometimes declines with time [25-29]. As an example, patients show improvement in their technique for using an asthma inhaler following training, but these gains are only sustained with booster training [4,30-32]. Specifically, compared to youngsters who do not get repeated coaching, those who do have an 8.2-fold higher likelihood of demonstrating proper technique [33].

Competence, as understood as the physical capacity to execute each stage of inhaler technique accurately, is yet another component critical to proper technique. Even with sufficient method knowledge, patients with physical problems that make it hard to move their hands and fingers, including arthritis, may find it challenging to use their inhaler devices [34]. Poor technique has also been linked to visual issues [35]. Patients' ability to properly use their inhalers may also be affected by physical factors such as poor coordination, which is more common in younger children and the elderly [11,36]. It may be much more challenging for individuals with cognitive difficulties, such learning impairments or trouble focusing, to recall and execute the several stages necessary for proper technique [37-38].

An individual's attitudes, or their views on inhalers and proper technique, might indirectly lead to inhaler abuse. Patients may be less inclined to utilize their inhaled drugs if they consider they are

unnecessary or inconvenient, however there are no studies that assess the influence of unfavorable views on technique [39, 40]. Inhaler usage may also be influenced by unfavorable attitudes that cause individuals to use them inconsistently, since regular use may reinforce appropriate technique via skill maintenance [18].

When individuals have self-efficacy, they believe in their ability to overcome obstacles and use the inhaler correctly. In general, about a quarter of children with asthma and 22% of those with chronic obstructive pulmonary disease are 100% certain that they are using their inhalers properly [41-43]. There is a correlation between higher levels of self-efficacy and improved technique. In particular, a long-term research indicated that kids who were better able to use their inhalers had were more likely to complete more Diskus steps properly if they had self-efficacy [23]. A person's degree of competence is not always proportional to their self-efficacy. Even though both the kid and their parents were sure that the child was using the inhaler appropriately, the youngster nevertheless made a number of technique mistakes [44–46].

CONCLUSION

The study highlighted significant findings regarding the use of asthma inhalers and treatments. While most participants reported controlled asthma symptoms, a portion expressed concerns about dependency, long-term side effects, and reduced inhaler effectiveness over time. These results underscore the importance of patient education, regular treatment reassessments, and addressing psychological aspects of inhaler use.

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ANNEX 1: DATA COLLECTION TOOL

Age		Gender	Male	Female
Asthma duration				
Asthma treatment	SABA	LABA	Oral medications	Others
Asthma control	Uncontrolled		Controlled	

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
I feel that I rely too much on my asthma inhaler.					
I experience withdrawal-like symptoms when I do not use my inhaler.					
I have become anxious when I forget my inhaler or am unable to access it.					
Over time, I have needed to increase my use of the inhaler to control my asthma symptoms.					
I sometimes use my inhaler even when I don't feel a need for it.					
Using my inhaler has helped to significantly improve my asthma condition.					
I feel that my asthma symptoms are getting worse despite regular inhaler use.					
I believe my asthma would worsen if I stopped using the inhaler regularly.					
I think I am dependent on my asthma treatments to manage my symptoms.					
I am concerned that long-term use of asthma medications may negatively impact my health.					
I have experienced side effects from my asthma treatments that worry me.					
I feel that my inhaler is less effective now than when I first started using it.					
I believe my inhaler usage has become habitual, even when I do not have severe symptoms.					

I trust that my current asthma treatment plan is the best option for controlling my asthma.					
I fear that over-reliance on inhalers could eventually worsen my overall respiratory health.					

APPENDIX 2: Participants responses to scale items

gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	282	62.7	62.7	62.7
	Female	168	37.3	37.3	100.0
	Total	450	100.0	100.0	

age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 25 years	37	8.2	8.2	8.2
	25-30 years	72	16.0	16.0	24.2
	31-35 years	102	22.7	22.7	46.9
	36-40 years	155	34.4	34.4	81.3
	40 years anf more	84	18.7	18.7	100.0
	Total	450	100.0	100.0	

nationality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Saudi	372	82.7	82.7	82.7
	non-Saudi	78	17.3	17.3	100.0
	Total	450	100.0	100.0	

smoke

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	smoked	41	9.1	9.1	9.1
	non-smoked	293	65.1	65.1	74.2
	Ex-smoked	116	25.8	25.8	100.0
	Total	450	100.0	100.0	

Asthma

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	318	70.7	70.7	70.7
	No	132	29.3	29.3	100.0
	Total	450	100.0	100.0	

Asthma control

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Uncontrolled	61	13.6	19.2	19.2
	Controlled	257	57.1	80.8	100.0
	Total	318	70.7	100.0	
Missing	System	132	29.3		
Total		450	100.0		

Chi-Square Analysis

Chi-Square Test

Frequencies

gender

	Observed N	Expected N	Residual
Male	282	159.0	123.0
Female	36	159.0	-123.0
Total	318		

age

	Observed N	Expected N	Residual
less than 25 years	37	63.6	-26.6
25-30 years	72	63.6	8.4
31-35 years	102	63.6	38.4
36-40 years	64	63.6	.4
40 years anf more	43	63.6	-20.6
Total	318		

nationality

	Observed N	Expected N	Residual
Saudi	318	318.0	.0
Total	318[a]		

a. This variable is constant. Chi-Square Test cannot be performed.

smoke

	Observed N	Expected N	Residual
smoked	33	159.0	-126.0
non-smoked	285	159.0	126.0
Total	318		

Asthma.control

	Observed N	Expected N	Residual
Uncontrolled	61	159.0	-98.0
Controlled	257	159.0	98.0
Total	318		

Test Statistics

	gender	age	smoke	Asthma.control
Chi-Square	190.302[a]	42.094[b]	199.698[a]	120.805[a]
df	1	4	1	1
Asymp. Sig.	<.001	<.001	<.001	<.001

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 159.0.

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 63.6.