

Does Patient Education Decrease Readmission Rates for Asthmatic Children in the Developed Countries?

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INTRODUCTION

Asthma is a chronic inflammatory condition that affects the airways. The features of the disease include narrowing of the airways, recurrent episodes of breathlessness, chest tightness and wheezing. The condition is one of the most common chronic illness in not only children but also in adults and aged individuals (Asthma Australia 2017). In Australia, the prevalence of Asthma among children is among the highest across the globe. One out of every nine Australians suffers from asthma. The condition is more common among males aged between 0-14, but more common among females aged 15 years and over. The disease is prevalent among individuals living in poor neighbourhoods and rural areas. Every person living with asthma should have a written action plan. However, only people aged 15 and over have a written action plan (Asthma Australia 2017). Only 41% of children who have developed the condition have an action plan (Asthma Australia 2017). In the United States, over 23 million individuals have the condition, with children projected to be about 6.8 million, or rather, an average of 1 out of every 10 school aged children (McCarty and Rogers 2012).

While Asthma is manageable, it poses an enormous burden on the Australian healthcare system. Further, the rate of readmission of children suffering from the condition has increased in various countries. One of the intervention strategies used to treat the disease is

a regular long-term regimen that the patient has to undertake (Boulet, 2015). In some instances, the patients may be required to adjust some of the behaviours to prevent the disease from developing into critical chronic levels. Education of the patients has been recommended as one of the mechanisms that can be used to increase patients' adherence to the treatment procedures and the administered regimen (American Academy of Allergy 2007) Asthma management plans can be considered as part of the education. The management plans will only be effective if they are explained to the patient. It is critical to point out that non-adherence to treatment is among the leading factors that have contributed to increased readmission and mortality rates among not only the children but also adults. In this case, it is important to consider the different mechanisms that can be used to help the patients to adhere to the treatment procedure (Goldstone 2015). This paper will investigate the effectiveness of education in helping to reduce the rate of readmission among children patients who have asthma in developed countries.

Background

According to Vicendese (2014), the rate of hospitalization among children who have Asthma has experienced a dramatic increase over the past ten years in the United States. According to research conducted by (Vicendese 2014), approximately 9459 or 28% of children who

have asthma in Australia had two or more readmissions over the period when the study was conducted. About 5% of the affected were readmissions within 28 days after discharge. Girls had a higher rate of readmission within 28 days compared to boys. Further, the rate of readmission increased during the grass pollen season, meaning that seasons affect the rate of readmission among patients with asthma (Vicendese 2014). During the grass pollen season, boys had a higher percentage of readmission compared to girls. Although the study was conclusive and applied qualitative scientific methods of data collection, it recommended further research on the topic to provide a more comprehensive report on the number of readmissions.

Patient or family education is one of the key recommendations for helping in reducing readmission rates among children who have Asthma (Cabana, Slish et al. 2014). Although there is limited literature on the role of education in mitigating the rate of readmission among children, it helps to improve the knowledge of the patients and parents on the different characteristics of the disease, control of symptoms, increase the self-esteem of the patients, reduce exacerbations, first aid mechanisms, and admission of medication, among others (Gillissen 2007). There is widespread concern that most of the patients, both children and adults, are not well informed about asthma, guidelines and recommendations of the best ways to live with the disease, proper device inhalation techniques, intervention strategies, and the use of asthma action plans (McCarty and Rogers 2012). Addressing asthma in children can help prevent the condition from advancing to the chronic stage and contribute to reducing the amount of money that is used during the hospitalization process (Ekim 2016).

There is the need for a long-lasting intervention strategy that can be used to prevent the high

number of readmission among children who have asthma. The purpose of this research is to conduct an extensive literature review to learn about the effectiveness of education in reducing the rate of readmission among children. As it has already be pointed out, few people know about the different perspectives of the disease and how to prevent its various features from recurring once they have been treated, or asthma management mechanism. Children should be educated on the optimum behavior and self-management criteria that will help them in managing asthma and lead a normal life, similar to that of their peers. Although this research predominantly focuses on children suffering from the disease because of the increased number of readmission, there is need to educate the larger public on asthma. Australians and people across the world should be aware that asthma is among the chronic illnesses affecting a large number of individuals so that they can be vigilant and avoid the risk factors associated with the condition. Further, there is need educate citizens on home care, first aid activities, medication strategies, and handling of patients with asthma (Ekim 2016).

Objectives

The purpose of this paper is to investigate whether patient education can help to reduce the number of readmission among pediatric asthma patients in developed countries. It is critical to point out that the improved management of the disease in developed countries is based on the premise that they have adequate resource and personnel who can develop educational programs, educate the patients and their families, develop follow-up activities, and help in the implementation of the identified intervention strategies (McCarty and Rogers 2012). The purpose of this research is to answer the research question, “Does patient education decrease readmission rates for asthmatic children in the developed countries?” To successfully address

the problem, the following objectives have to be met:

- To understand the causes of readmission among patients suffering from asthma in order to ascertain whether they are manageable outside the hospital setting
- To conduct a literature review on the different existent educational programs for children living with Asthma
- To identify the best education program that can be used in Australia to reduce the rate of re-admission among children affected by asthma
- To find the mechanisms and action plans that can be used to reduce the rate of readmission among children suffering from asthma.
- To conclude, based on the research results and analysis, whether patient education can be an effective mechanism that can prevent the rate of readmission among children suffering from asthma in developed countries.

The objective of this research is to analyse relevant literature from developed countries to come up with a conclusion on whether educational programs can be used to reduce the rate of readmission among children. Australia is one of the leading countries regarding children with asthma (Asthma Australia 2017). In this case, this research can be beneficial since it will provide evidence-based and applicable intervention strategies that can be implemented to reduce the number of readmission of children suffering from the condition. Increasing the knowledge levels on the different features, symptoms, intervention strategies, and medication of asthma among the Australian population can help in reduction of prevalence and management of the condition.

Methodology

The research design applied in this paper is qualitative since no primary data was collected, or rather, the research activities did not involve the collection of information from any population. To gather relevant information that will help in answering the research question, and meeting the set objective for this paper, a literature search was conducted using two mechanisms. First, the initial search involved the collection of information regarding the rate and incidence of asthma among children in Australia and other developed countries, as well as the rate of admission and readmission. This research was conducted extensively on Google using the keywords, "prevalence of asthma among children in Australia, the prevalence of asthma among children in developed countries, and the rate of readmission among asthmatic children in Australia." The choice of inclusion was based on the relevance of the information, where government data was preferred, and time of publication where only articles and websites that have up-to-date information were preferred. The purpose of this literature was to provide a rationale and justify the research topics to inform on the current facts on the ground (Appendix 1).

The second literature search was more extensive and involved search of relevant article publications on different databases. The databases used for this search were Cochrane, CINAHL, Medline, EMBASE, and PubMed. The choice of these databases was based on the premise that they have a wealth of articles in healthcare. Keywords and Boolean operators were used for the search. The keywords used included "patient education," "reduction of readmission rates among asthmatic children," "asthmatic children," "developed countries" and "asthma education programs." The keywords were connected using various Boolean operators to yield different statements that were used to search for relevant literature from the databases.

For instance, one of the statements used were, “patient education among asthmatic children in developed countries.” In some search occasions, the term “develop countries” was eliminated and replaced with specific developed countries such as the U.K., U.S., and Australia (Appendix 1).

Inclusion and exclusion criteria

The inclusion criterion for this literature search was based on the quality of the paper in relation to the key terms. Articles that discussed education programs for patients suffering from asthma were included in the review. Few items were found to be exclusively covering the effect of educational programs on readmission among children. Most of the articles dealt with the total population while others only focused on adults alone. For this reason, articles that covered any education program intended to reduce the rate of readmission among patients suffering from asthma and included children as the population were included. Articles that dealt with developing countries were eliminated since the focused of this research paper was on developed countries. Articles that offered or recommended different educational programs that have been used in developed countries and documented the effects of these programs were used. The purpose of inclusion for these articles was based on the premise that they could provide a basis for recommending an evidence-based educational program that can be used in Australia to reduce the rate of readmission. There was no preference for the database source or the type of article since the major focus was on the quality of the content. The articles that were to be used had to be primary sources that are published in English and available in full text (Table 1).

Table 1: Research inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Relevant keywords	Keywords not relevant
Source primary	Source not primary
Research conducted in developed countries	Research developed in developing countries
Research based articles	Articles with opinion
Documented effects of educational programs	Did not have documented effects of educational programs
Published in English	Published in any other language other than English
Accessible in full text	Full text version not available

Critical appraisal

An appraisal of the chosen articles was conducted to ensure that they were valid and generalized the whole population. The focus was on the quality of the content, and the methods of data collection used. To ensure that the appraisal of the articles was done in a coherent manner, Young and Solomon critical appraisal tool (2009) was used. The choice of this appraisal tool was because it can be utilized it is flexible, or rather; it can be used to review both qualitative, quantitative, and other types of research design. The following are a set of questions that should be considered according to Young and Solomon (2009).

Table 2: Appraisal Questions

1.	Is the study question relevant?
2.	Does the study add anything new?
3.	What type of research question is being asked?
4.	Was the study design appropriate for the research question?
5.	Did the study methods address the most important potential sources of bias?
6.	Was the study performed according to the original protocol?
7.	Does the study test a stated hypothesis?
8.	Were the statistical analyses performed correctly?
9.	Do the data justify the conclusions?
10.	Are there any conflicts of in interest?

Table: Summary of the results from the reviewed articles

Author and year	Aims and objectives	Sample size and selection criteria	Methods of data collection, instrumentation, and analysis	Major findings	Limitations	Significance to the current research
Wesseldine, McCarthy & Silverman (1999).	The aim was to find out whether structured, nurse-led discharge packed for children admitted with acute asthma reduced the rate of readmission to hospital or any emergency departments	The study population comprised children aged between 2 and 16 years old. Randomisation was done using computer software	A randomised control trial that comprised 160 children between the ages of 2-16 admitted who were admitted with Asthma in the past one year. A structured discharge educational program that consisted 20 minutes education to the patients was used for the experimental group. Data analyses was done using SPSS software package.	The research did not find a relationship between patient education and reduction of readmission. However, there was a decrease in many in-home visits by general practitioners and time lost from school.	Because of the expensive nature of the extended contact between the nurses and the patients, the study took short durations. The limited time could not have been enough to educate the patients fully.	The research was conducted in Great Britain, which is a developed country. Further, it sought to examine whether patient education among children suffering from asthma helps in the reduction of readmission. The article is relevant because it conducted a qualitative research study on the research topic of the current study.
McCarty & Rogers (2012).	The aim of the research was, "to describe an inpatient asthma education program quality improvement project that uses evidence-based guidelines to provide asthma education to families when a child is hospitalized with an acute asthma exacerbation."	There was no sample size assumed for this study since it was a general education program that was intended to teach families how to handle asthmatic children.	No data was collected since this was an educational program targeting to reach as many people as possible. The article discusses some teaching approaches for asthmatic children parents that facilitate completion of individualized asthma action plans.	According to the authors, "Data collected since the start of the program show tremendous improvement in education and compliance with completion of individual asthma actions plans before discharge."	There was no identified limitation in this article since it is not a research paper but a detailed documentation of various teaching strategies that can help in increasing self-management of asthmatic patients.	The article analyses different teaching strategies for parents whose child suffer from asthma. Further, it analyses how these teaching strategies can facilitate completion of individualized asthma action plans. In this case, it is essential in understanding different perspectives of asthmatic patient education and on offering recommendations for Australia

Ekim & Ocakci (2016).	The aim of the study was to examine the efficiency of nurse-led discharge planning program for children asthma administration based on the transition theory	The study involved 120 children and their parents. The inclusion criteria used for this research involved children between 1 and 6 years, those that have been newly recognized with asthma, and parent must have been present during admission of the child.	A quasi-experimental study was conducted using the retrospective clinical trial design that involved two groups. Statistical analysis was carried out using the SAS statistical program	According to the researchers, "the discharge planning education, home visit, and telephone counselling given to the intervention group were effective in improving asthma management." However, the rate of readmissions did not decrease significantly when compared to the control group.	The study was only carried out among children below 6 years old. The results are not generalizable for older children, or rather, age groups. Only two researchers were involved in the research program. Other than that, resources differ between families and hence the quality of care at home is different.	The results are relevant in analysing the effect of patient education on the reduction of readmission among children with asthma. The article is important because it includes family education.
Cloutier, Hall, Wakefield & Bailit, (2005).	The aims of the researchers was to conduct a study that would reveal whether development of an asthma management plan that is administered by primary care provides helps patients to adhere to The aim of the research was to National Asthma Education and Prevention Program asthma guidelines. The research also investigated whether adherence to the primary care providers assisted in the reduction of medical	Children between 6 months and 18 years were included in the study. 3748 children were used in the data collection process.	The research adopted a research design described by the authors as "Analysis of the utilization of medical services for a cohort of 3748 children with asthma who presented for care at one of six primary care urban clinics in Hartford, Connecticut, and who were enrolled in a disease management program (Easy Breathing) between June 1, 1998, and August 31, 2002."	According to the researchers, "An organized, disease management program increased adherence to the National Asthma Education and Prevention Program guidelines for anti-inflammatory use by primary care providers in urban clinics. Adherence to this element of the guidelines by primary care provider reduced hospitalizations, emergency department visits, and outpatient visits for children with asthma."	The researchers did not randomize the study population. There is possibility that many children had asthma were not enrolled in the program. Further, the adopted sampling strategy would favor children who used medical services regularly.	The article was chosen because of the program that was used to increase adherence to set procedures in the management of asthma. It is essential for this research because it will be used as a basis for discussing the effectiveness to adherence of medical guidelines in the prevention of and management of asthma among children.

	service utilization among children in poor neighborhoods					
Tolomeo (2009)	To determine impact of group-based asthma self-management programs	Children admitted to New England Children’s Hospital between January 2005 and December 2006	Primary data collection from New England Children’s Hospital	The program resulted in more educated parents and children	Education was only provided in pre-discharge	The article was chosen because it provides first-hand information on an asthma educational program and its findings
Boulet, Boulay et al. (2015)	Study sort to assess the benefits of primary care educational programs on patient outcomes and preferences for health care	Adult 124 asthma patients	Intervention study	Reduction in clinician visits and improved asthma management techniques for patients	Focus on the older population only; hence, no basis for age comparison	Though this study focuses on children, the use of this article is meant to provide an insight on the variation of educational programs between children and adults

Results

The literature analysis returned only two themes:

1. Importance of nurse-led discharge programs in managing childhood asthma
2. Development of an evidenced based training program to support affected families.

Theme 1

Three of the reviewed studies examined the significance of nurse-led discharge programs in managing child asthma. A common finding emanating from the studies was in the line that the programs resulted in positive outcomes for patients, which are seen in terms of reduced lost school time (Wesseldine, McCarthy et al. 1999), reduced home visits by clinicians (Ekim 2016), and increased adherence to preset guidelines of asthma management by primary care givers (Cloutier, Hall et al. 2005). Overall, these

findings are plausible considering that the intervention program results in better outcomes for all involved stakeholders including care givers, patients, and their families. This is seen in terms of reduced home visits by clinicians, improved asthma management techniques at home and adherence to professional standards.

Theme 2

The importance of developing an evidence-based training program is highlighted in all the four primary sources reviewed. A key variation between the articles is that some Wesseldine, McCarthy et al. (1999); (McCarty and Rogers 2012); (Cloutier, Hall et al. 2005), focus exclusively on pre-discharge training while others, (Ekim 2016), focus even on post discharge training. While the studies did not find any direct relationship between patient education and readmission, evidence suggested improved

management outcomes as a result of the training initiatives.

Theme 3

The studies undertaken have shown the need for communication between caregivers and family members. Accurate and timely communication will promote partnership between the healthcare providers and the families. The early identification and reporting of asthma cases is essential in the will ensure that the care providers do not fail in their duty of ensuring that asthma is controlled (McCarty and Rogers 2012). The promptness in the reporting of cases of the disease will make its management to be easier. Adherence will not be affected if there is no understanding of the patient and the parents' concerns about the prescribed medication.

Theme 4

The study has shown that proper planning is necessary to ensure the success of the management program. A relationship exists between failure of the program and lack of planning which comprises of the design, implementation and maintenance (Wesseldine, McCarthy et al. 1999). There is need for interdependence between primary care and specialized care to ensure that patients are treated in the best way. The education of care givers will be essential in reducing the readmission rates of patients.

Discussion

The analysis of the research results shows that there is no positive correlation between patient education and reduction of readmission among children with asthma. However, it has been identified that patient education helps in the reduction of visits to the emergency room. Patient education is a contemporary intervention strategy. The favourable structuring and formulation of education programs will ensure that they effectively reduce the readmission

among children patients suffering from Asthma. Educational programs that primarily focus on the child and their family members helped in the reduction of emergency department visits. Thus, developing consistent and coherent education programs that focus on increasing self-management practices among patients suffering from asthma can aid in the reduction of readmission. Although the current research did not find a positive correlation between patient education among children suffering from asthma and the rate of readmission, the fact that there is a reduction in emergency care department means that it can help in the reduction of readmission if it is applied successfully (McCarty and Rogers 2012). Educational programs for asthmatic patients across all age divides should be comprehensive and teach how to discover different features of the disease before they have occurred. Self-management is an effective strategy that is linked to education and can help in the reduction of re-admission. However, patients have to be taught extensively to avoid instances of error that can lead to fatal injuries, heightening of the symptoms or even death.

The education program proposed by (McCarty and Rogers 2012) can be useful in helping to reduce the rate of readmission among asthmatic children in Australia. If the system is applied effectively, it can contribute to preventing the advancement of the diseases to chronic levels, or rather, it can increase collaboration between healthcare providers and the patients in treating the condition. (McCarty and Rogers 2012), advocate for an inpatient education system that targets to increase self-management of the patients. Since the target group is children, the target group should be parents whose children have been diagnosed with the disease (American Academy of Allergy, 2007). The goal of the education program is to increase the parent knowledge and skills that will help them to recognize asthma symptoms, avoid triggers, and

to act appropriately concerning the provision of care and handling exacerbations. The system of education should be individualized for each patient and should provide guidelines on how to perform daily management of the patients, adjust medication in relation to acute symptoms, and how to recognize and handle worsening asthma. McCarty and Rogers (2012) advocates for the formulation of an asthma curriculum that will direct the educational content, teaching strategies, and setting of the education program. Further, they provide the roles of inpatient asthma nurse practitioner, including developing of asthma action plans, developing follow-up strategies, one-to-one education, and staff education. There should be a framework to assess outcomes to ensure that the parents have understood all the educational content and can practice it effectively.

Limitations

One of the major limitation of this study is that there is no adequate evidence to ensure that there is a conclusive study on the topic, or rather; there are few research articles that have been published on the topic. In this case, there is a research gap relating to the role of patient education in the reduction of readmission among asthmatic children in developed countries. This research could have been able to provide a more conclusive and valid answer if it adopted a quantitative research approach. A Collection of primary information using randomized control trial could have been more effective. While most of the articles assessed the efficiency of patient education, it did not handle its effect on reduction of the rate of readmission. Rather, the focus was on how well education programs helped in the reduction of emergency department visits.

Conclusion

Asthma is one of the chronic conditions that affect people across all age segments. Increasing

self-management can be used in the reduction of readmission rates. It is important to point out that increasing the knowledge of asthmatic children on how they can handle themselves, or rather, on behavioural change can help in the management of the disease to prevent it from advancing into chronic stages. Although different researchers did not find a positive influence of patient education on the reduction of readmission among asthmatic children, the rate of visits to the emergency room reduced. Thus, if implemented appropriately, education programs can be useful in the prevention and management of asthma among asthmatic children.

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Appendices

Appendix 1: Database Search

Database	Initial Results	Refined Results	Met Inclusion Criteria	Comments
Biomed Central	97	3	3	Further reviews of the three articles led to only one article being included in the process of critical appraisal.
CINAHL	25	4	0	
ClinicalTrials.gov	12	3	0	
Cochrane	0	0	0	
Expanded Academic ASAP	790	80	6	Further reviews revealed that the articles did not meet the criteria required to reach the critical appraisal
Journals@Ovid	24	10	3	The articles did not meet further inclusion because they did not mention children suffering from asthma. In general, they covered the role of education across all diseases.
MEDLINE	5119	0	0	
PLOS Medicine	12	0	0	
PubMed	1	1	1	The article met further reviews and hence was included in the process of critical appraisal.

ProQuest Central	439	15	4	Most of the articles did not have full text available online. They were up for purchase. It is critical to point out that this was the source of most of the articles addressing the topic directly. Four articles met the criteria for critical appraisal
World Health Organisation Library	8	0	0	
Google Scholar	10600	50	7	Upon further review, 5 articles met the criteria and were include in the critical appraisal process.
Wiley online library	590	10	5	Upon further review, all articles adequately met 3 inclusion criteria and were therefore considered for critical appraisal.

Appendix 2: Summary of critical appraisal of reviewed studies

Article	Q1. Is the study question relevant?	Q2. Does the study add anything new?	Q3. What type of research question is being asked?	Q4. Was the study design appropriate for the research question?	Q5. Did the study methods address the most important potential sources of bias?	Q6. Was the study performed according to the original protocol?	Q7. Does the study test a stated hypothesis?	Q8. Were the statistical analyses performed correctly?	Q9. Do the data justify the conclusion?	Q10. Are there any conflict of interest?
McCarthy & Rogers (2012)	Yes. The paper aims to describe an inpatient asthma education program quality improvement approach that utilizes evidence-based guidelines to provide education	Yes. The introduction of patient-centred asthma educational programs greatly improve asthma control	The paper intends to <i>Describe</i> an evidence-based asthma education plan. P- Families of hospitalized child with acute asthma exacerbation. I –	Yes. The researchers used semi-structured after-class evaluations to determine the perceptions of the parents towards the education program	Yes. The authors identified literacy issues, emotional problems and social concerns as potential sources of bias.	Yes. The research was conducted according to the specified methods and time-frame.	The hypothesis was not stated explicitly. However, the purpose was stated.	No statistical methods are discussed in the research.	Yes. The data supports the conclusion that asthma education is essential in improving self-management	No

	to paediatric patient's families		evidence-based inpatient asthma education program. O- improved self-management							
Ekim & Ocakci (2016)	Yes. The paper intends to test the efficiency of a nurse-led discharge planning program for children with asthma based on the transition theory	Yes. The use of transition theory-based discharge planning could improve the quality of care provided to children with asthma	The authors were interested in determining whether a nurse-led discharge plan based on the transition theory would be effective in asthma management in children. P- Children with asthma I – Transition theory-based discharge planning program C- No intervention program O- success outcomes on child asthma	Yes. The authors used a quasi-experimental design which was appropriate as it gave the participants the equal chance to be the experimental and control groups, given the ethical dilemma involved classifying humans needing these interventions.	No source of bias was stated in the research	Yes. The researchers did not deviate from the protocol described.	The hypothesis was not indicated in the study.	Yes	Yes. The data indicated improved perceptions of the parents in the intervention groups, as well as decreased outpatient visits. This supported the conclusion that transition theory-based discharge planning could significantly improve ongoing asthma management for children.	No

<p>Wessel dine, McCarthy & Silverman (1999)</p>	<p>Yes. The study sought to determine the effectiveness of a structured nurse-led discharge program for asthmatic children.</p>	<p>Yes. The researchers tested and found effective a pragmatic approach of reducing readmissions</p>	<p>The authors were interested in examining the impact of the nurse-led discharge program on paediatric patients' rehospitalisation and ER visits</p> <p>P- Acute asthmatic children</p> <p>I – Structured discharge procedure</p> <p>C- control group without any intervention</p> <p>O- Reduced readmission rates</p> <p>T- 12 months</p>	<p>Yes. A randomized controlled trial was conducted for one year, which seems perfect as it was necessary for comparison to determine the effectiveness of the program.</p>	<p>Yes. The sources of bias identified include using a single investigator for both the intervention and data collection</p>	<p>Yes. The stated protocol was followed.</p>	<p>No hypothesis indicated.</p>	<p>There are scanty details of the statistical analysis process. However, the Mann-Whitney U tests were used to compare groups, which is appropriate.</p>	<p>Yes. The data supports the conclusion that education, even the simplest form, during the hospitalization of asthmatic children could go a long way in reducing readmissions</p>	<p>Not stated</p>
<p>Cloutier, Hall, Wakefield & Bailit, (2005)</p>	<p>Yes. The research attempts to determine if the implementation of asthma management programs in a city</p>	<p>Yes. That the management program increased adherence, which helped in reducing readmissions, ER</p>	<p>The paper attempted to examine a relationship between two different variables.</p> <p>P- Poor, minority, Urban</p>	<p>Yes. Using a cohort study involving all children enrolled in the easy Breathing program</p>	<p>Limitations identified include the fact that the population was not random, hence leaving out numerous</p>	<p>The researchers adhered to the stated research protocol</p>	<p>No. the hypothesis is not stated. However, the objectives are stated.</p>	<p>Yes. The statistical analysis is explained in detail and includes univariate</p>	<p>Yes. The findings support the conclusion that an asthma guideline-based management program by</p>	<p>Not stated</p>

<p>through primary care providers can increase adherence to national asthma guidelines, and if this adherence can decrease the use of medical services for children in low-income, and low-minority populations</p>	<p>and outpatient visits</p>	<p>children with asthma</p> <p>I – Use of asthma guideline by primary care providers</p> <p>O- Reduce hospitalizations and ER visits</p> <p>T- 4 years</p>	<p>gave the researcher a large respondent base, which would provide sufficient information.</p>	<p>eligible participants out of the study. Further, the data used underestimated number of provider prescriptions, and there was no way to measure the compliance of patients during the study period.</p>			<p>te and multivariate logistic regression and x2 analysis which seem to be correctly used.</p>	<p>primary providers increases adherence to national guidelines, which in turn results to reduced ER visits and readmission of asthmatic children.</p>	
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