

https://dspace.org/

Do home circumstances affect asthma control in children from a developing country?

Garba, Bilkisu Ilah

2014-04-23
http://hdl.handle.net10539/14568

Downloaded from a DSpace repository. https://dspace.org/

DO HOME CIRCUMSTANCES AFFECT ASTHMA CONTROL IN CHILDREN FROM A DEVELOPING COUNTRY?

Bilkisu Garba Ilah

Dissertation submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in fulfillment of the requirements for the degree

of

Master of Science in Medicine

Johannesburg, August 2013

DECLARATION

I, Dr Bilkisu Garba Ilah declare that this dissertation is my own work. It is being submitted for the degree of Master of Science in Medicine in the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any University.



10th day of September, 2013

This work is dedicated to all the asthmatic children in the developing countries.

ABSTRACT

Asthma control is a central focus of the updated version of the GINA Guidelines, in which clinicians are encouraged to concentrate on assessment of control, defined by symptoms, lung function and the presence or history of exacerbations. Control is of critical importance in asthma and is now more important than the actual level of severity. Measures of asthma control do not necessarily perform well and all of them need to be looked at as a whole as studies have shown.

Many factors have been found to be associated with poor asthma control ranging from concomitant rhinitis and co morbidities to poor compliance with medications or inappropriate inhaler technique in addition to home or environmental factors. Several factors around the home of asthmatic patients contribute to poor asthma control which includes parental smoking or smoking by other relatives within the home, biomass fuel exposure, exposure to aeroallergens and animal danders which all leads to failure in achieving control despite adequate drug therapy.

This cross sectional study was conducted in 115 asthmatics children with the aim of determining the level of asthma control and home circumstances that contributes to poor asthma control. Most patients were males and blacks with 55.65% of patients having controlled asthma. Use of biomass fuel was uncommon in this study and none of the home circumstances was found to be associated with poor asthma control in this study.

Day time and nocturnal asthma symptoms were significantly associated with poor asthma control. Good adherence to medications was found to be associated with asthma control similar association was not seen with good inhaler technique. The higher the FEV_1 percent predicted the better the asthma control. Day time and nocturnal asthma symptoms were associated with FEV_1.

Results from this study need confirmation in a representative population study. Further longitudinal study is required to see if home circumstances may affect asthma control in patients that had controlled asthma.

ACKNOWLEDGEMENT

I give gratitude to God for His mercies and benevolence in completing my Masters.

I am greatly indebted to my supervisors Professor Daynia Ballot and Dr Debbie White for dedicating their time and rendering fruitful contributions; may the Almighty reward you all.

Furthermore, I would like to express my profound gratitude and appreciation to Dr Susan Klugman, Dr Ronit Weil and Dr Judy Hyslop. I would also like to thank Professor Peter Cooper for his encouragement. I would also like to thank the nurses of ward 284- Sisters Emily and Judy. To all the children that participated in the study, thank you very much.

To my beloved husband Dr Aminu Muhammad Sakajiki, thank you so much for being patient with me. I thank my lovely children, Khadija, Zainab, Aisha and Sadiq for enduring with me during the period of my programme.

To Baba, Innar Nasiru, Innar Aminu, Aunty, my brothers and sisters I say thank you very much, you are truly a family.

TABLE OF CONTENTS

	Page
DECLARATION	ii
DEDICATION	iii
ABSTRACT	iv
ACKNOWLEDGEMENTS	vi
TABLE OF CONTENTS	vii
LIST OF FIGURESS	xi
LIST OF TABLES	xii
NOMENCLATURE	xiii
PREFACE	xv
1.0 INTRODUCTION	1
1.0 Introduction	1
2.0 LITERATURE REVIEW	4
2.1 Asthma definition	4
2.2 Epidemiology of asthma	5
2.3 Aetiology and risk factors of asthma	8
2.4 Pathophysiology of asthma	13

2.5 Clinical features 15

2.6 Diagnosis of asthma 18

2.7 Differential diagnosis of childhood asthma 21

2.8 Asthma management and control 23

2.8.1 Factors affecting asthma control 23

2.8.2 Home circumstances associated with poor asthma control 26

2.8.3 Measures of asthma control 31

2.9 Review of asthma control studies 44

2.10 Study objectives 48

3.0 MATERIALS AND METHODS 49

3.1 Study population 49

3.1.1 Sample size 49

3.1.2 Study site 50

3.1.3 Inclusion criteria 50

3.1.4 Exclusion criteria 50

3.1.5 Study design 50

3.2 Methods 50

3.2.1 Questionnaires 51

3.2.2 Examination 53

4.0 RESULTS 55

4.1 Demographic characteristics 55

4.2 Asthma control 55

4.3 History 59

4.4 Home circumstances 60

4.5 Clinical features 61

4.6 Clinical features of atopy 61

4.7 Spirometry 62

4.7.1 Asthma control and FEV_1 62

4.7.2 Comparism of controlled and uncontrolled asthma with FEV_1 63

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATIONS 64

5.1 Discussion 64

5.2 Conclusions 71

5.3 Recommendations 72

APPENDIX A 73

APPENDIX B 74

APPENDIX C 76

APPENDIX D 78

APPENDIX E 79

APPENDIX F 80

APPENDIX G 81

REFERENCES 82

LIST OF FIGURES

Figure	Page
2.1 Pathophysiology of asthma	15
4.1 Pie chart showing level of asthma control	56

LIST OF TABLES

Table	Page
2.1 Differential diagnosis of asthma in children 5 years and older	21
2.2 Differential diagnosis of asthma in children 5 years and younger	22
2.3 Levels of asthma control according to GINA	35
4.1 Mean age ± SD according to gender and race	55
4.2 Asthma control symptoms	57
4.3 Association between asthma control and gender	57
4.4 Asthma control and race	58
4.5 Asthma control and age	58
4.6 Questions on asthma diagnosis and management	59
4.7 Association between home circumstances and asthma control	60
4.8 Examination findings	61
4.9 Levels of asthma control and FEV_1	62
4.10 Comparism of asthma control with FEV_1	63
4.11 Asthma control symptoms and FEV_1	63

NOMENCLATURE

%	Percent
χ^2	Chi- square
ACT	Asthma control test
ACQ	Asthma control questionnaire
AIR	Asthma insights and reality
ALLSA	Allergy society of South Africa
ATAQ	Asthma therapy assessment questionnaire
BHR	Bronchial hyperresponsiveness
C-ACT	Childhood asthma control test
Cm	Centimeter
df	Degree of freedom
FeNO	Fractional exhaled nitric oxide
FEV_1	Forced expiratory volume in 1 second
GINA	Global Initiative for Asthma
GOAL	Gaining optimal asthma control
ICAM-1	Intercellular adhesion molecule 1
IL	Interleukin

ISAAC	International Study of Asthma and Allergies in Childhood
IUGR	Intra uterine growth restriction
Kg	Kilogram
MMEF	Maximal mid expiratory flow rate
NAEPP	National Asthma Education and Prevention Program
NHLBI	National Heart Lung and Blood Institute
no	Number
PEFR	Peak expiratory flow rate
POMS	Patient outcomes management survey
SACAWG	South African chronic asthma working group
SAβA	Short acting beta 2 agonist
SD	Standard deviation
WHO	World Health Organisation

PREFACE

The high prevalence of asthma in the world and the impact of morbidity warrant the need to ensure patients are well controlled. Home circumstances that constitute part of the environmental triggers of asthma need to be identified and intervention offered so that asthma control can be fully achieved which is the goal of asthma therapy. It has been shown that knowledge of harmful effects of smoking does not necessarily translate into behavioral change. Parental hobbies such as painting within the house can have a deleterious effect on asthma control. Improvement of parental behavior with proper education is necessary.

Asthma control questions have been recommended by Global Initiative for Asthma (GINA). Using these questions allows clinicians to become familiar with the goals of asthma management, at the same time to also identify patients with poor control and evaluate the effects of interventions. In addition, completion of these questions in the waiting room may save consultation time and group monitoring may be used to enhance disease management and thus reduce resource utilization.

However the questions recommended by GINA do not include asking about environmental circumstances which are very important in determining asthma control.

There is the need to stress the importance of assessing asthma control because patients tend to overestimate their level of control and underestimate severity which may result in poor outcome of the disease. Assessing for the patient's home circumstances in the asthma clinic may help in achieving optimal asthma control by offering appropriate environmental measures.

Data from the present study will enable us to know the level of asthma control in our clinic and the home circumstances prevailing amongst our asthmatic patients that contribute in achieving inadequate control.