A COMPARATIVE STUDY OF AN INTEGRATED PHARMACEUTICAL CARE PLAN AND A ROUTINE CARE IN BRONCHIAL ASTHMA

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ABSTRACT

Background:

Bronchial asthma is a chronic chest disease constituting a serious public health problem all over the world. Unfortunately it is still too often poorly controlled and evidence-based guidelines are still insufficiently implemented. A paradigm shift for asthma care implies that the level of asthma control should be continuously monitored and that treatment should be adjusted according to the patients' current asthma-control status. Pharmacists could assist to achieve and maintain asthma control by providing patient education and medical supervision .

Aim: The study compares the effect of asthma care by clinical pharmacist intervention versus routine care on asthma control.

Patients and Methods:

A 2-month randomized, controlled trial was conducted in outpatient clinics of Ain Shams University Hospitals, Cairo, Egypt. Patients were randomly assigned to receive routine care (n=30) or a pre-defined pharmacist intervention (n=30). This intervention mainly focused on patient education, improving inhalation technique and medication assessment. Primary outcome was the level of asthma control, as assessed by the Asthma Control Questionnaire (ACQ) .

Results:

By the end of the study, the intervention patients who received a written action plan significantly improved their ACQ results than routine care group who did not receive a plan ($p<0.0001$).The intervention also reduced reliever medication use and the frequency of night-time awakenings due to asthma. Inhalation technique and adherence to controller medication were significantly better in the intervention group.

Conclusion:

The present study results provide supportive evidence concerning pharmacists' favorable effects on asthma patient care and support clinical pharmacists as key members of the health care team.

Keywords: Asthma Control Questionnaire; Asthma Action Plan; Patient education; Adherence; Inhalation Technique.

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LIST OF CONTENTS

LIST of TABLES

Table **Page**

LIST OF ILLUSTRATIONS

Figure **Page**

LIST OF ABBREVIATIONS

5-LO inhibitor	5- Lipooxygenase inhibitor
AC	Adenylyl Cyclase
ACQ	Asthma Control Questionnaire
ACT	Asthma Control Test
ASM	Asthma Self-Management
ATS/ERS	American Thoracic Society/ European Respiratory Society
BA-pMDI	Breath-actuated pressurised Metered-Dose Inhaler
BREATHE	Better Respiratory Education and Asthma Treatment in Hinton and Edson
BT	Bronchial Thermoplasty
CAM	Complementary and Alternative Medicine
c-AMP	cyclic- Adenosine monophosphate
CCL5	Chemokine Ligand 5
CCR3	Chemokine Receptor 3
CD4	Cluster of Differentiation type 4
COPD	Chronic Obstructive Pulmonary Disease
CSS	Churg-Strauss Syndrome
CYP	Cytochrome p450 enzyme
Cys-LTs	Cysteinyl Leukotrienes
DNA	Deoxy Ribonucleic Acid
DPI	Dry Powder Inhaler
ER visits	Emergency Room visits related to asthma
EXCELS study	The Epidemiologic Study of Xolair: Evaluating Clinical Effectiveness and Long-term Safety in Patients with Moderate-to-Severe Asthma (EXCELS)
FCεRI	high-affinity receptor for the Fc region of immunoglobulin E
FDA	Food and Drug Administration
FE_{NO}	Fractional Exhaled Nitric Oxide
FEV1	Forced Expiratory Volume in one second
FVC	Forced Vital Capacity
GINA	Global Initiative for Asthma
GM-CSF	Granulocyte-Macrophage Colony-Stimulating Factor
GR	Glucocorticoid Receptor
GWA	Genome-Wide Association
HDAC2	Histone deacetylase type 2

HLA	Human Leukocyte Antigen
HRV	Human Rhinovirus
IBM Corp.	International Business Machine Corporation
ICS	Inhaled corticosteroid
IgE	Immunogloulin E
IL-4	Interleukin-4
LABA	Long-acting beta2 agonist
LAMA	Long-acting muscarinic antagonist
LRI	Lower Respiratort Infections
LTRA	Leukotriene Receptor Antagonist
m-RNA	messenger- Ribonucleic acid
NCCAM	National Center for Complementary and Alternative Medicine
NNT	Number needed to treat
PC_{20}	Provocation Concentration of methcoline required to cause a 20% fall in FEV1
PCAP	Pharmacy Asthma Care Program
PDE	Phosphdiestrase
PEF	Peak Expiratory Flow
PKA	Protein Kinase A
p-MDI	pressurised Metered-Dose Inhaler
RSV	Respiratory Syncytial Virus
SABA	Short-acting beta2 agonist
SFC	Salmeterol/Fluticasone Combination
SPSS	Statistical Package for the Social Sciences
Th2	T-lymphocyte helper cell type 2
TNF-α	Tumer Necrosis Factor-alpha
TSLP	Thymic Stromal Lymphopoietin
VCD	Vocal Cord Dysfunction
VHC	Valved holding chamber
WAAP	Writen Asthma Action Plan
WHO	World Health Organization

INTRODUCTION

Asthma is a common chronic disorder with increased prevalence worldwide. World Health Organization (WHO) estimates that 300 million people are affected with asthma (Anandan, et al., 2010).

Asthma is characterized by paroxysmal or persistent symptoms such as dyspnea, chest tightness, wheezing, sputum production and cough, associated with variable airflow limitation and a variable degree of airways hyper-responsiveness to endogenous or exogenous stimuli (Lougheed, et al., 2010). Although good asthma control can be achieved in clinical trials, it is more difficult to achieve in real-life situation studies (Rabe, et al., 2004). Despite advances in asthma management, a large number of patients are still "insufficiently controlled", putting them at risk for asthma-related morbidity and mortality (Mehuys, et al., 2008).

Salama and his colleagues reported that health care delivery was inadequate in Egypt as irrational prescribing and practices were generally widespread and misconceptions were commonly encountered, both among the public and health professionals. Therefore, minimum standards of health care for individuals with asthma must be identified (Salama, et al., 2010).

In an attempt to improve asthma control, the Global Initiative for Asthma (GINA) updated its asthma management guidelines