



Burden of disease associated with asthma among the adult general population of five Middle Eastern countries: Results of the SNAPSHOT program

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ABSTRACT

Background: Asthma affects millions worldwide resulting in a significant disease burden. However, data on asthma burden from the Middle East is limited. This analysis describes the asthma burden in Egypt, Turkey and a Gulf cluster (Kuwait, Saudi Arabia and United Arab Emirates) as part of the SNAPSHOT program.

Methods: SNAPSHOT was an observational, cross-sectional program carried out by telephone in a random sample of the adult general population of the five above mentioned countries. Quotas were defined per country demographics. Subjects were considered to have asthma if they fulfilled the screening criteria, based on the global Asthma Insights and Reality studies. Data collected included demographics, physician consultations, and asthma control (measured by the Asthma Control Test; ACT). Quality of life was assessed using the EuroQol Five-Dimension questionnaire (EQ-5D); and limitations to daily activities using the modified Sheehan Disability Scale (SDS).

Results: 939 subjects answered questions related to asthma burden. Overall, 367 (44.2%) reported uncontrolled asthma ($ACT \leq 19$), and reported significantly lower EQ-5D-3L utility values (0.6 ± 0.4) and EQ-VAS scores (60.7 ± 24.2) compared to controlled subjects (0.8 ± 0.3 and 75.3 ± 19.8 respectively) ($p < 0.0001$). A significantly higher proportion with uncontrolled asthma also reported experiencing impact on activities of daily living compared to subjects with controlled asthma ($p < 0.0001$). Overall, 355 (37.8%) asthma subjects were followed by a physician. However, most visits were unscheduled (695;78.0%).

Conclusion: Uncontrolled asthma imposes a significant burden in these Middle Eastern countries resulting in increased frequency of healthcare use, lower quality of life, and a higher impact on daily life compared to controlled asthma.

1. Introduction

Asthma is a serious public health challenge, affecting millions worldwide, placing an increasing burden on governments, healthcare infrastructure, families, patients and caregivers. Data from the 2013 Global Burden of Disease (GBD) study estimates that worldwide approximately 489,000 people died from asthma in 2013 [1], and the

number of disability-adjusted life years (DALYs) lost due to asthma was over 22 million, which translates to almost 1% of all DALYs lost [2]. Accurate data on the prevalence and disease burden of asthma is essential to implement effective strategies to address this growing problem.

Asthma is known to have a profound impact on quality of life, not only due to its physical effects, (such as discomfort from symptoms,

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night time awakenings and impaired physical activity), but also its psychological and social effects, such as increased levels of anxiety or depression and limitations on work/school and social life [3]. The guidelines for asthma management published by the Global Initiative for Asthma (GINA) define the primary long-term goal to be the achievement of asthma control. This consists of two domains: optimising the day-to-day control of the disease and minimising the risk of poor future outcomes [4]. Uncontrolled or undertreated asthma imposes a far greater burden in terms of frequency of healthcare use, quality of life and productivity, than that which is well-controlled and properly treated [5–7]. Strategies towards improving access to care and medication, patient education and adherence to treatment, as well as the continued development of more effective or convenient therapies can help reduce the burden of asthma globally [3]. Training of healthcare professionals and improved implementation of asthma management guidelines are an essential part of successfully managing asthma and promoting the delivery of quality asthma care. GINA published a major revision to the guidelines for the management and prevention of asthma in 2014 [8] and has recently released an update [4]. However, uptake of guidelines is generally considered to be poor and many patients remain poorly controlled despite the availability of effective treatments.

Recent data on the disease burden attributable to asthma in the Middle East are scarce, despite the widely-acknowledged impact of this disease on the daily lives of people with asthma. The Asthma Insights and Reality (AIR) surveys have been conducted in many countries worldwide, including several countries in the Middle East and North Africa (MENA) region, with the aim of assessing prevalence, symptom severity, control and management of the disease with respect to the GINA guidelines [9]. The Asthma Insights and Reality in Turkey (AIRET) study was conducted in 2005 [10]. The Asthma Insights and Reality in the Gulf and Near East (AIRGNE) study was conducted in 2008 and covered five countries: Jordan, Kuwait, Lebanon, Oman and the United Arab Emirates (UAE) [11]. The Asthma Insights and Reality in the Maghreb (AIRMAG) study was also conducted in 2008 in the North African countries of Algeria, Morocco and Tunisia [12,13]. In addition, a national household survey was conducted in Saudi Arabia in 2013 [14]. These studies reported a low level of asthma control resulting in a significant impact on the lives of those with the disease and/or on healthcare resources. The findings of these studies indicate that improved levels of asthma control are required, and identify better implementation of the treatment guidelines and improving patient education as potential areas for improvement.

SNAPSHOT is a cross-sectional, observational, population based program in adults that investigates the burden of disease associated with asthma in five countries in the Middle East using an identical methodology; the impact of asthma on quality of life and daily activities, and the increased burden due to uncontrolled disease. This information will help to inform strategies to address this growing problem and ultimately to reduce the burden of asthma in the region.

2. Methods

2.1. Summary of the SNAPSHOT protocol

The SNAPSHOT program was a multi-country, cross-sectional, observational study conducted in a random sample of the adult general population of five countries (Egypt, Turkey, Kuwait, Saudi Arabia, and the UAE) between July 2014 and February 2016. The objective of the SNAPSHOT program was to provide updated epidemiological data on the prevalence, burden of disease, quality of life and healthcare resource use attributed to four chronic diseases in the participating countries, namely: asthma, allergic rhinitis, bipolar disorder and benign prostatic hyperplasia (BPH). The complete methodology and study rationale have been described in detail elsewhere [15].

The program was conducted over the telephone and carried out by

computer-assisted personal interviewing (CAPI) with the information collected via web-based electronic data capture. A target sample of 10,000 subjects from the adult general population of Turkey and Egypt and 15,000 for the Gulf cluster (comprised of Kuwait, Saudi Arabia and the UAE) was defined based on country demographics in terms of age and gender, using the most recent census data, using a random stratified sampling method. In the Gulf cluster, it was difficult to reach the target sample size, and since the combined number of interviews conducted to date in Saudi Arabia, Kuwait and UAE showed that the study objectives could be achieved from a sample size perspective recruitment was stopped in February 2016 and the database locked on 11th April 2016.

Subjects who agreed to participate in the study were first invited to complete the screening questionnaire to identify subjects fulfilling the criteria for the diseases of interest and to document social and demographic characteristics, as well as the presence of co-morbidities. Respondents who met the criteria for one or more diseases were invited to continue the interview by replying to a detailed, disease specific questionnaire. This questionnaire collected additional information on burden of disease, disease management and healthcare resource utilisation. If respondents screened positive for more than one disease, they were randomised by the CAPI system to respond to only one of the disease-specific questionnaires, to limit the duration of the interview. For all subjects, the interview ended with the EuroQoL Five-Dimension questionnaire (EQ-5D) (©EuroQol Research Foundation. EQ-5D™ is a trade mark of the EuroQol Research Foundation) [16,17]. The full interview was conducted in one telephone call. Interviews were proposed in Arabic, English or Turkish using translated validated questionnaires and conducted by trained staff of local specialised CROs; Omega (Turkey) for interviews in Turkey and Infomine Healthcare Research (Egypt) for interviews in the Arabic-speaking countries. Data management and analysis were performed by MS Health (Morocco).

2.2. Data collected for this analysis

The analysis presented here focuses solely on asthma and aims to provide information on the burden of this disease across the countries studied. The case definition used for asthma was based on the criteria used in the global AIR studies [9]. As part of the screening questionnaire, subjects were asked whether they had been told by their doctor that they suffer from asthma; whether they had experienced one of the following symptoms over the last 12 months: wheezing, nocturnal coughing, chest tightness or breathlessness; whether they had experienced an asthma attack in the last 12 months; whether they had used asthma medications in the last 12 months and whether they used Ventolin or inhaled bronchodilators or a short acting β agonist in the last 12 months. A positive answer to any of the latter three questions led to classification of the interviewee as a subject with asthma. It is important to note that the criteria were designed to collect information on the current prevalence (last 12 months) and not the lifetime prevalence of the disease. Details about symptoms, level of asthma control, healthcare resource use and the impact of asthma on daily activities and quality of life were collected.

Control of asthma was assessed using the Asthma Control Test (ACT); a five-item patient reported outcome measure for the assessment of asthma control. A score > 19 indicates controlled asthma; a score \leq 19 indicates asthma that is not controlled [18]. The ACT has been validated in studies in both Turkish [19] and Arabic [20]. Daily activities were assessed using a modified version of the Sheehan Disability Scale (SDS). This is a patient reported outcome measure for assessing impairment of functioning in daily activities. Three functional areas of daily life are considered in this questionnaire: work / school life; social life / leisure activities and family life / home responsibilities (the SDS was used with the permission of the SDS copyright holder Professor DV Sheehan. © Sheehan DV 1996 & 2008 & 2016) [21,22]. For this analysis, the timeframe used to assess symptom impact was 'over the past

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