



ORIGINAL ARTICLE

Comparative evaluation of metered-dose inhaler technique demonstration among community pharmacists in Al Qassim and Al-Ahsa region, Saudi-Arabia



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Abstract *Title:* Comparative evaluation of metered-dose inhaler technique demonstration among community pharmacists in Al Qassim and Al Ahsa regions, Saudi Arabia.

Background: Patients rely on the information about use of proper inhaler technique when dispensed by community pharmacists however; several studies have shown that patients are unable to show correct inhalation technique. The aim of this study is to assess the ability of community pharmacists in Al Qassim region to demonstrate proper inhalation technique of metered dose inhaler and compare the baseline outcomes with a similar study at Al-Ahsa region.

Method: We approach 96 pharmacies in Al Qassim region as mock patient (Investigator). The investigator asks the Pharmacist to guide him about proper inhalation technique of metered dose inhaler. Investigator completes a standardized and validated checklist of 8 steps of inhaler device use immediately after leaving the pharmacy. Baseline data were compared between the two study groups et al. Ahsa and Al-Qassim for variables for effectiveness of pharmacist handling of patient queries.

Result: A total number of 96 community pharmacies were approached in five cities of the Al Qassim province in Saudi Arabia This study has found that majority (93.7%) of community pharmacists failed to demonstrate proper inhalation technique of pMDI inhaler.

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Conclusion: The pharmacists demonstrated particularly poor skills involving steps for coordination of the actuation process with the mechanics of inhalation with MDI. The errors detected in this simple assessment session, if translated to patient self-medication errors, are potentially significant.

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1. Introduction

Asthma and chronic obstructive pulmonary disease are highly prevalent in the recent years (Gershon et al., 2010; Hamdan et al., 2013). About 20–25% prevalence rate of asthma exists in Saudi patients (Hamdan et al., 2013). The use of inhaled medications has advantage in the management of bronchial asthma, because of their greater efficacy and fewer adverse effects when compared with available oral medications (Osman et al., 2012; Hamdan et al., 2013). The most important advantage of inhaled therapy is the direct, localized delivery of a high concentration of drugs to the airways with minimal systemic side effects (Broeders et al., 2009). Improper use of inhalation device can lead to decrease in drug delivery and poor asthma control. This in turn, leads to frequent emergency visits (Broeders et al., 2009; Lindgren et al., 1987). The percentage of drug that reaches the lung after proper inhalation technique is only up to fifteen percent (Hanania et al., 1994). It is evident in many studies that pharmacists lack the knowledge of handling inhaler devices (Hamdan et al., 2013; Hanania et al., 1994; Osman et al., 2012). There are various types of inhalation devices available in the market. However, the most common aerosol drug delivery device is pressurized metered dose inhaler.

It is logical that patients get demonstration of proper inhalation technique when dispensed by community pharmacists. A study has been done in the Al Ahsa region of Saudi Arabia shows that pharmacists were found to have a poor recognition with the steps considered while using an inhaler (Khan and Azhar, 2013). In our study we evaluated the demonstration of inhalation technique of a pressurized metered dose inhaler by community pharmacists in the Al Qassim region, Saudi Arabia and compare the baseline status between these two regions.

2. Method

We have done a cross sectional observational study in the Al Qassim region of Saudi Arabia and data were collected from November 2013 till February 2014. Al Qassim province is one of the thirteen administrative provinces of Saudi Arabia. It is located in the center of Saudi Arabia approximately 400 km northwest of Riyadh the capital (Qassim at glance, 2014).

A total number of ninety-six community pharmacies of five cities that are Buraydah, Unayzah, Ar Rass, Al Badai and Bukayriyah were visited. The pressurized metered dose inhaler that we have selected is Ventolin® Inhaler that contains salbutamol. This study was approved by research and ethics board of Buraidah Private Colleges.

The mock patient that is actually investigator has visited these community pharmacies with pressurized metered dose inhaler that is Ventolin®. The investigator asked the

community pharmacist to demonstrate the inhaler technique for him. Investigator observed the technique carefully and completed the validated checklist (Bryant et al., 2013) of 8 steps after leaving the pharmacy. Another step has been added after the checklist which states that pharmacist can ask to repeat the steps from patient after demonstration (Giraud and Roche, 2002; Knudsen, 2014). It helps the pharmacist to discover the problems that patient will face while using the product. The asthma management guidelines also recommend checking this step at each patient visit (EPR-3, 2007).

We did a comparative evaluation of metered-dose inhaler technique demonstration among community Pharmacists in Al Qassim and Al Ahsa regions. Al Ahsa is the major urban center in the eastern region of Saudi Arabia (Khan and Azhar, 2013).

2.1. Statistical analysis

Baseline data were compared between the two study groups et al. Ahsa and Al-Qassim for variables for effectiveness of pharmacist handling of patient queries.

The recommended checklist of metered dose inhaler is specified in Table 1.

2.2. Ethics approval

This study was approved by research and ethics board of Buraidah Private Colleges, November 2013.

3. Results

A total number of 96 community pharmacies were approached in five cities of the Al Qassim province in Saudi Arabia. Majority of pharmacies are located in Buraydah ($n = 67$, 67.7%), 8 (8.3%) in Unayzah, 9 (9.3%) in Ar Rass, 7 (7.2%) in Bukayriyah and 5 (5.2%) in Al Badai refer Fig. 1. We observed the age group of these pharmacists. The 20–30 age groups of pharmacists are 50%, 30–40 are 42% and 40–50 are only 8% refer Fig. 2.

Table 1 Recommended checklist of metered dose inhaler.

1. Remove cap and shake the inhaler vigorously
2. Breath out slowly and completely
3. Hold the inhaler in the upright position
4. Insert the mouthpiece into mouth between closed lips or up to 4 cm in front of the open mouth
5. Depress the canister once and at the same time begin slow deep inhalation continue to total lung capacity
6. Remove the inhaler with closed lips
7. Hold breath for 10–15 s
8. Wait for 20–30 s before starting the second puff
9. Did your pharmacist ask to repeat the steps after demonstration?

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