

**FREQUENCY OF OUTPATIENT INHALERS PRESCRIPTIONS IN RIYADH**

**Abstract**

**Background** Community pharmacists help patients in making informed decisions about their treatment and prevent the problems that could be developed from self-medication. The maintenance therapy with inhaled medications are the keystone of pharmacotherapy in many respiratory diseases such as asthma and chronic obstructive pulmonary disease. The aim of the present study was to explore the frequency of inhalers dispensing in Riyadh

**Methodology** This was a cross-sectional, observational study carried out in Riyadh city to analyze the prescriptions in outpatient pharmacies.

**Results and discussion** The total number of prescriptions is 198 prescriptions that include 650 different medications. Out of the 650 medications, the majority were in the form of tablet (61.7%), followed by capsules. The present study showed that the use of inhalers was uncommon in Riyadh. Out of 650 drugs, 27 drugs were available as inhalers (4.15 %). Out of 27 Inhalers, Ventolin inhalers is the most prescribed (48.14 %), followed by Seretide Evohaler (29.62%) and Symbicort Turbuhaler (22.2 %).

**Conclusion** Although there is a high prevalence of respiratory diseases, the inhalers prescriptions and dispensing aren't common. This may be due to the use of these inhalers as an OTC drugs. The role of pharmacists should be to dispense the regular medications only by prescriptions and to counsel patients about the information regarding the use of inhalers

24 **Keyword** Outpatient, Inhalers, Prescriptions, Riyadh

25

## 26 **Introduction**

27 Community pharmacists commonly help patients in making the appropriate informed decisions  
28 about their therapy and prevent the problems that could be developed from self-medication. The  
29 appropriate dispensing processes of medicines prescription or over the counter (OTC)  
30 medications require more attention on patients' needs than on medication marketing (1).

31 Studies report that the public consider pharmacists who work in community pharmacies are an  
32 accessible and reliable source of information, mainly in the case of using OTC medicines and in  
33 minor diseases. Moreover, they are generally accepted as qualified health care professionals and  
34 medications experts (2,3).

35 It is now accepted that the main responsibility of a pharmacist is the provision of medication  
36 therapy to attain specific therapeutic results with the goal of improving patient healthiness and  
37 quality of life. So, the traditional role of the pharmacist which was limited to the dispensing and  
38 selling of medicines expanded to include other roles that lead to improve the quality of patients'  
39 outcomes. (4)

40 Asthma and chronic obstructive pulmonary disease (COPD) (5, 6) are common reasons of  
41 mortality and morbidity. Management of these two diseases requires consistent administration of  
42 several medications through inhalation (7, 8).

43 There is an increasing prevalence of COPD and asthma worldwide, with asthma now is  
44 considered one of the most widespread chronic diseases (9). Generally, asthma affects 334

45 million patients and the number is rising particularly in the developing countries (10) which  
46 change the quality of life and the survival negatively (9).

47 Globally, it is estimated that in 2016 there were 251 million cases of COPD, with the number of  
48 cases likely to increase with increasing the age of populations and increasing the number of  
49 smokers (11, 12)

50 Inhaled maintenance medications are the cornerstone of pharmacotherapy in different respiratory  
51 diseases such as asthma and chronic obstructive pulmonary disease. The major two classes of  
52 inhaled medication that are usually used include corticosteroids (ICS) and bronchodilators (13)

53 Typically, in patients with asthma, inhaled corticosteroids and long-acting  $\beta$ -agonists are used  
54 regularly, with short acting  $\beta$ -agonists (SABAs) used as rescue therapy only when needed (14-  
55 16). In COPD, both long-acting  $\beta$ -agonists and long-acting muscarinic antagonists have been  
56 used alone or in combination (17, 18)

57 Inhaler medications generally should be given by prescriptions and not as OTC. Moreover, the  
58 physician should diagnose the disease and determine the stage of it before choosing the  
59 medications. So it isn't rational to dispense these medications without prescriptions. The  
60 objective of this study was to explore the frequency of dispensing inhalers in the prescriptions of  
61 outpatient pharmacies in Riyadh.

62

### 63 **Methodology**

64 This was a cross-sectional, observational study conducted to analyze the prescriptions in  
65 outpatient pharmacies in Riyadh city. We analyzed the randomly collected prescriptions to

66 demonstrate the number of the prescribed inhalation drugs. The required data include the total  
67 number of drug prescribed, the total number of prescriptions, the total number of inhalers and the  
68 most dispensed inhalers.

69

## 70 **Results and discussion**

71 The total number of prescriptions is 198 prescriptions that include 650 different medications.

72 There were 68 prescriptions contain 2 drugs, 62 prescriptions contain 3 drugs, 38 prescriptions  
73 contain 4 drugs and 30 prescriptions contain more than 4 drugs. Total number of prescriptions is  
74 shown in table 1

Number of drugs in the prescription	Number of prescriptions
2 drugs	68
3 drugs	62
4 drugs	38
More than 4 drugs	30

75

76 Out of the 650 medications , the majority were in the form of tablet (61.7%), followed by  
77 capsules , drops (such as eye , ear , nasal and oral drops) , topical dosage forms (such as creams  
78 ,gels, lotions, ointments) , injection dosage forms (such as syringe, pens, vials and ampules) ,  
79 inhalers and liquid dosage forms that were given orally ( such as syrups, solutions and  
80 suspensions).The number of the dosage forms of the drugs is shown in table 2.

81

Tablet	Capsule	Liquid - orally	Topical	Drops	Injections	Inhalers	Others
401	56	27	39	55	38	27	7

82

83 The present study showed that the use of inhalers was uncommon in Riyadh. Out of 650 drugs,  
84 27 drugs were available as inhalers (4.15 %). The number of different inhalers dispensed is  
85 shown in table 3.

86

Ventolin inhaler	Seretide evohaler	Symbicort turbhaler
13	8	6

87

88 Out of 27 Inhalers, Ventolin inhalers which includes Albuterol is the most prescribed (48.14 %),  
89 followed by Seretide Evohaler which includes salmeterol/fluticasone propionate (29.62%) and  
90 Symbicort Turbuhaler which includes budesonide; formoterol fumarate dihydrate (22.2 %).

91 Ventolin is given as needed but the other inhalers are given regularly. Therefore it is rational to  
92 dispense Ventolin more than other inhalers.

93 The overall use of inhalers in the prescriptions was 4.15 %. This is not consistent with the high  
94 prevalence rate of asthma. A national Saudi household survey was conducted in 2013 estimated  
95 that the self-reported clinical diagnosis of asthma to be 4.05% (19). Another survey using the  
96 European Community Respiratory Health Survey questionnaire carried out in Riyadh among a  
97 total of 2405 Saudi people aged between 20–44 years showed that the prevalence of physician-  
98 diagnosed asthma reported was 11.3% (20). Regarding COPD, the overall prevalence of COPD  
99 in Saudi Arabia is 4.2% (21).

100 These results may happen due to the use of some inhalers as OTC and this is wrong because the  
101 majority of these medications should be prescribed by physicians. Additionally, George  
102 Schiffman reported that the OTC medications that are available to treat bronchospasm have little,

103 if any, effect on airway inflammation. It is not suitable to use OTC asthma drugs unless  
104 prescribed by a physician knowledgeable in the management of asthma (22)

105

## 106 **Conclusion**

107 Although there is a high prevalence of respiratory diseases, the inhalers prescribing and  
108 dispensing aren't common. This may be due to the use of some of these inhalers as an OTC  
109 drugs. The role of pharmacists should be to dispense the regular medications only by  
110 prescriptions and to counsel patients about the information regarding the use of inhalers.

111 Moreover, the pharmacists should attend the continuous medical information courses regarding  
112 the appropriate use of inhalers.

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## 114 **References**

- 115 1. Bennadi, D. (2013). Self-medication: A current challenge. *Journal of basic and clinical pharmacy*,  
116 5(1), 19-23. doi:10.4103/0976-0105.128253
- 117 2. You, J. H., Wong, F. Y., Chan, F. W., Wong, E. L., & Yeoh, E.-K. (2011). Public perception on the  
118 role of community pharmacists in self-medication and self-care in Hong Kong. *BMC clinical  
119 pharmacology*, 11, 19-19. doi:10.1186/1472-6904-11-19
- 120 3. Catic, T., Jusufovic, F. I., & Tabakovic, V. (2013). Patients perception of community pharmacist in  
121 bosnia and herzegovina. *Mater Sociomed*, 25(3), 206-209. doi:10.5455/msm.2013.25.206-209
- 122 4. Hepler, C. D., & Strand, L. M. (1990). Opportunities and responsibilities in pharmaceutical care.  
123 *Am J Hosp Pharm*, 47(3), 533-543.
- 124 5. Gibbs KP, Small M. Asthma. In: Walker R, Edwards C, editors. *Clinical pharmacy and  
125 therapeutics*. 3rd ed. Philadelphia: Churchill Livingstone; 2003. pp. 375–395.
- 126 6. Gibbs KP, Small M. Chronic obstructive pulmonary disease. In: Walker R, Edwards C, editors.  
127 *Clinical pharmacy and therapeutics*. 3rd ed. Philadelphia: Churchill Livingstone; 2003. pp. 397–  
128 411.
- 129 7. Global initiative for asthma 2015, guidelines. Available at: <http://www.ginasthma.com>.
- 130 8. Chronic obstructive pulmonary disease, guidelines 2015. Available at:  
131 <http://www.goldcopd.com/Guidelineitem.asp>.
- 132 9. Papi, A., Brightling, C., Pedersen, S. E., & Reddel, H. K. (2018). Asthma. *The Lancet*, 391(10122),  
133 783-800. doi:10.1016/S0140-6736(17)33311-1

- 134 10. Vos, T., Flaxman, A. D., Naghavi, M., Lozano, R., Michaud, C., Ezzati, M., Murray, C. J. L. (2012).  
135 Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990-2013;  
136 2010: a systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*, 380(9859),  
137 2163-2196. doi:10.1016/S0140-6736(12)61729-2
- 138 11. Lopez-Campos, J. L., Tan, W., & Soriano, J. B. (2016). Global burden of COPD. *Respirology*, 21(1),  
139 14-23. doi:10.1111/resp.12660
- 140 12. British Lung Foundation. Chronic obstructive pulmonary disease (COPD). Statistics; 2017.  
141 Available from: <https://statistics.blf.org.uk/copd>.
- 142 13. Dekhuijzen, P. N., Vincken, W., Virchow, J. C., Roche, N., Agusti, A., Lavorini, F., . . . Price, D.  
143 (2013). Prescription of inhalers in asthma and COPD: towards a rational, rapid and effective  
144 approach. *Respir Med*, 107(12), 1817-1821. doi:10.1016/j.rmed.2013.09.013
- 145 14. NICE Guideline NG80. Asthma: diagnosis, monitoring and chronic asthma  
146 management. November 2017. [Cited 2019 Mar 20]. Available  
147 from: <https://www.nice.org.uk/guidance/ng80>.
- 148 15. British guideline on the management of asthma. September 2016. [Cited 2019 Mar 18].  
149 Available from: <https://www.sign.ac.uk/assets/sign153.pdf>.
- 150 16. Principles of Prescribing in Adult Asthma 2018 March. [Cited 2019 Mar 20]. Available from:  
151 [http://foi.nhsgrampian.org/globalassets/foidocument/foi-public-documents1—all-](http://foi.nhsgrampian.org/globalassets/foidocument/foi-public-documents1—all-documents/nhsgmcn_asthma.pdf)  
152 [documents/nhsgmcn\\_asthma.pdf](http://foi.nhsgrampian.org/globalassets/foidocument/foi-public-documents1—all-documents/nhsgmcn_asthma.pdf). [Google Scholar]
- 153 17. NHS Grampian respiratory MCN – principles of prescribing inhaled therapies in  
154 COPD. March 2018. [Cited 2019 Mar 21]. Available  
155 from: [file:///C:/Users/mail/Desktop/My%20documents/Ongoing%20papers/Scotland%20Respir](file:///C:/Users/mail/Desktop/My%20documents/Ongoing%20papers/Scotland%20Respiratory/nhsgmcn_copd.pdf)  
156 [atory/nhsgmcn\\_copd.pdf](file:///C:/Users/mail/Desktop/My%20documents/Ongoing%20papers/Scotland%20Respiratory/nhsgmcn_copd.pdf).
- 157 18. GOLD. Teaching slide set. 2018. [cited 2019 Mar 21]. Available from: [https://goldcopd.org/gold-](https://goldcopd.org/gold-teaching-slide-set/)  
158 [teaching-slide-set/](https://goldcopd.org/gold-teaching-slide-set/). [Google Scholar]
- 159 19. Moradi-Lakeh, M., El Bcheraoui, C., Daoud, F., Tuffaha, M., Kravitz, H., Al Saeedi, M., Mokdad, A.  
160 H. (2015). Prevalence of asthma in Saudi adults: findings from a national household survey,  
161 2013. *BMC Pulmonary Medicine*, 15(1), 77. doi:10.1186/s12890-015-0080-5
- 162 20. Al Ghobain, M. O., Algazlan, S. S., & Oreibi, T. M. (2018). Asthma prevalence among adults in  
163 Saudi Arabia. *Saudi Med J*, 39(2), 179-184. doi:10.15537/smj.2018.2.20974
- 164 21. Al Ghobain, M., Alhamad, E. H., Alorainy, H. S., Al Kassimi, F., Lababidi, H., & Al-Hajjaj, M. S.  
165 (2015). The prevalence of chronic obstructive pulmonary disease in Riyadh, Saudi Arabia: a BOLD  
166 study. *Int J Tuberc Lung Dis*, 19(10), 1252-1257. doi:10.5588/ijtld.14.0939
- 167 22. MedicineNet. (2019). Asthma: List of OTC Asthma Medications and Inhalers. [online] Available  
168 at: [https://www.medicinenet.com/asthma\\_over\\_the\\_counter\\_treatment/article.htm](https://www.medicinenet.com/asthma_over_the_counter_treatment/article.htm) [Accessed  
169 12 Nov. 2019].