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Dextromethorphan Use in the Outpatient Department

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Aim: The present study was conducted to describe the use of dextromethorphan in the outpatient department.
Methodology: This is a retrospective study that involves evaluating electronic prescriptions for dextromethorphan among outpatients in a public hospital in Alkharj.
Results: During the study period, 348 patients received dextromethorphan. Most of them were females and the age of more than half of them was between 20 and 39 years. Most of the patients used dextromethorphan for 5 days (63.51%) and about 30% of patients used it for 7 days. Most of the prescriptions were written by emergency department (93.97%).
Conclusion: The present study showed that dextromethorphan was commonly prescribed in the outpatient setting in Al-Kharj. Furthermore, more studies are needed to explore the appropriateness of its use.

Keywords: Cough-suppressant; dextromethorphan; outpatient; use.

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1. INTRODUCTION

Cough-suppressant therapy incorporates the usage of pharmacologic agents that have either mucolytic effects and/or inhibitory effects on the cough reflex itself [1]. There are 2 types of over-the-counter (OTC) cough medications: antitussives and expectorants. There are several antitussive agents such as dextromethorphan but only one expectorant available in OTC products that is guaifenesin [2].

Cough suppressants such as dextromethorphan help cut the number of times you cough. Other cough suppressants include eucalyptus oil, camphor, and menthol [3]. Some cough products are available as a combination of more than one active ingredient such as the combination of both guaifenesin and dextromethorphan. Cough drugs may as well contain other ingredients that help in coating and soothing the throat [3,4].

Dextromethorphan is available also in combination with pseudoephedrine and brompheniramine and in the management of coughs and upper respiratory symptoms associated with allergies or the common cold [4]. Furthermore, dextromethorphan in combination with quinidine is indicated in the treatment of pseudobulbar affect [5,6].

Cough suppressants such as dextromethorphan do their job by blocking your cough reflex. Dextromethorphan isn't used to manage a cough with mucus and it can't relieve pain like the codeine [7]. It is used to temporarily relieve cough caused by the flu, the common cold, or other conditions. Dextromethorphan relieves the cough but will not manage the cause of the cough or speed recovery [8]. Dextromethorphan don't treat a cough that is caused by asthma, smoking, or emphysema [9].

Dextromethorphan is available in several dosage forms such as suspension, solution, liquid, capsule, liquid filled, elixir, and syrup [10]. Dextromethorphan and other cough and cold medicines have not been proven to be safe or effective in children under the age of six, and should not be used to treat cold symptoms in children under the age of six unless prescribed by a clinician [11].

Dextromethorphan may cause side effects such as lightheadedness, dizziness, nervousness, drowsiness, restlessness, vomiting, nausea, and stomach pain [8]. It also has several interactions with other medication; severe interactions of dextromethorphan include its interaction with isocarboxazid, procarbazine, phenelzine, selegiline, rasagiline, tranylcypromine, and safinamide [12]. The present study was conducted to describe the use of dextromethorphan in the outpatient department.

2. METHODOLOGY

This was a retrospective study that included reviewing the electronic prescriptions that included dextromethorphan among outpatients in a public hospital in Alkharj. The inclusion criteria included outpatient prescriptions that contained dextromethorphan in the study period from 1st of January 2018 to 30th of June 2018. Exclusion criteria included all of the inpatient prescriptions in addition to the outpatient prescriptions that didn't contain dextromethorphan.

The collected data included the personal data of patients, the number of prescriptions that included dextromethorphan and that were prescribed during different months of the study, duration of dextromethorphan use, the level of prescribers who prescribed dextromethorphan, type of dextromethorphan prescriptions, and the departments that prescribed dextromethorphan.

The data were collected from electronic medical records as an Excel file and After that the descriptive data were represented as frequencies and the percentages were calculated from frequencies by dividing each number by the total numbers, and after that multiplying the result by 100%.

3. RESULTS AND DISCUSSION

During the study period, 348 patients received dextromethorphan. Most of them were females and the age of more than half of them was between 20 and 39 years. Table 1 shows the personal data of the patients.

Table 2 shows the number of prescriptions that included dextromethorphan and that were prescribed during different months of the study. More than 22% of the prescriptions were prescribed in April and 19.83% were prescribed in June.

Table 1. The personal data of the patients

Variable	Category	Number	Percentage
Gender	Male	225	7.25
	Female	123	82.75
Age	Less than 10	13	3.74
	10-19	67	19.25
	20-29	105	30.17
	30-39	72	20.69
	40-49	37	10.63
	50-59	24	6.90
	More than 60	30	8.62
Nationality	Saudi	281	80.75
	Non- Saudi	67	19.25

Table 2. The number of dextromethorphan prescriptions that were prescribed during different months

Month	Number	Percentage
Jan	66	18.97
Feb	46	13.22
March	49	14.08
April	79	22.70
May	39	11.20
June	69	19.83

Table 3. The duration of dextromethorphan use

Duration	Number	Percentage
2 Days	14	4.02
3 Day	6	1.72
5 Days	221	63.51
7 Days	106	30.46
More than 7 days	1	0.29

Table 4. The level of prescribers

Prescribers Level	Number	Percentage
Specialist	2	0.57
Resident	345	99.14
Consultant	1	0.29

Table 5. The type of the prescriptions

Type of the prescription	Number	Percentage
Regular	306	87.93
V.I.P	2	0.57
Urgent	31	8.91
Emergency	9	2.59

Table 6. The departments that prescribed dextromethorphan

Departments	Number	Percentage
Emergency	327	93.97
Cardiology	2	0.57
Chest	5	1.44
E.N.T	4	1.15
Nephrology	6	1.72
Obstetrics & Gynecology	3	0.86
Rheumatology	1	0.29

Table 3 shows the duration of dextromethorphan use. Most of the patients used dextromethorphan for 5 days (63.51%) and about 30% of patients used it for 7 days.

Table 4 shows the level of physicians who prescribed dextromethorphan. Almost all of the prescriptions were written by residents (99.14%).

Table 5 shows the type of dextromethorphan prescriptions. Most of the prsecriptions were regular prescriptions (87.93).

Table 6 shows the departments that prescribed dextromethorphan. Most of the prescriptions were written by emergency department (93.97%).

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Dextromethorphan was commonly prescribed in the outpatient setting. It is a drug that is used in frequently in many over-the-counter cough and cold medicines for its antitussive effects [13]. Most of the patients used dextromethorphan for 5 days or for 7 days. This is rational because it is used only for short term treatment. It is used to temporarily relieve cough caused by the flu, the common cold, or other conditions [8] and should not be used for cough that is associated with chronic diseases such as bronchitis. Paul et al stated that dextromethorphan is ineffective for cough suppression in children with bronchitis [14].

The age of most of the patients who received dextromethorphan was more than 19 years and only 3.74 % of the patients were less than 10 years. This is also reasonable because dextromethorphan has not been proved to be safe or effective in children under the age of six, and it should not be administered in children under the age of six unless the doctor specifically directs it [11]. The Canadian labelling standard outlines the requirements for obtaining marketing authorization for non-prescription oral antitussive products containing dextromethorphan or dextromethorphan hydrobromide as a single ingredient for use in adults and children aged 12 and up to relieve symptoms of the common cold [15].

Dextromethorphan should be used carefully because it can lead to several adverse effects. Journey et al reported that this medication can affect the central nervous system, cardiovascular system, and musculoskeletal system and that all of the patients should receive counsel about the dangers of dextromethorphan before using it [16]. Furthermore, dextromethorphan is frequently combined with antihistamines, acetaminophen, and pseudoephedrine in several cough and cold medicines, which can cause additional adverse clinical effects in the setting of overdose [13]. Journey et al stated that dextromethorphan is also a regularly abused drug because of its hallucinogenic, euphoric, and dissociative properties [16]. Brown et al reported that the usage and misuse of dextromethorphan can cause its toxicity [17]. Numerous reports suggest misuse of dextromethorphan over the last years, especially in the United States, the EU, Korea, and Australia [18]. When exceeding label-specified maximum dosages, dextromethorphan acts as a dissociative hallucinogen [18].

4. CONCLUSION

The present study showed that dextromethorphan was commonly prescribed in the outpatient setting in Al-Kharj. It is important to counsel all of the patients before using dextromethorphan due to its adverse effects and due to the frequent misuse of it. Furthermore, more studies are needed to explore the appropriateness of its use.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Bolser DC. Cough suppressant and pharmacologic protussive therapy: ACCP evidence-based clinical practice guidelines. Chest, 2006;129(1 Suppl): 238S–249S.
2. Familydoctor. Cough Medicine: Understanding Your OTC Options. Cited 17 November 2021. Available https://familydoctor.org/cough-medicine-understanding-your-otc-options/.
3. Webmd. OTC Medicines for Cough: What You Need to Know. Cited 17 November 2021. Available:https://www.webmd.com/cold-and-flu/otc-meds.
4. Dailymed. MUCINEX DM- guaifenesin and dextromethorphan hydrobromide tablet, extended release. Cited 17 November 2021. Available:https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=70987d06-d206-445f-bd0d-5e1345b8465c.
5. Dailymed. BROMFED DM- brompheniramine maleate, pseudoephedrine hydrochloride and dextromethorphan hydrobromide syrup. Cited 17 November 2021. Available:https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=e241d83e-996c-494d-b3fe-97f1ef4809ed.
6. FDA. Nuedexta. Cited 17 November 2021. Available: https://www.accessdata.fda.gov/drugsatfda_docs/label/2019/021879s014lbl.pdf.
7. Webmd. A Guide to Cough Medicine. Cited 17 November 2021. Available: https://www.webmd.com/cold-and-flu/cold-guide/cough-syrup-cough-medicine.
8. Medlineplus. Dextromethorphan. Cited 17 November 2021. Available: https://medlineplus.gov/druginfo/meds/a682492.html.
9. Drugs.com. Dextromethorphan. Cited 17 November 2021. Available: https://www.drugs.com/dextromethorphan.html.
10. Mayoclinic. Dextromethorphan (Oral Route). Cited 17 November 2021. Available:https://www.mayoclinic.org/drugs-supplements/dextromethorphan-oral-route/description/drg-20068661.
11. Webmd. Dextromethorphan Hbr Syrup - Uses, Side Effects, and More. Cited 17 November 2021. Available: https://www.webmd.com/drugs/2/drug-363/dextromethorphan-hbr-oral/details.
12. Rxlist. Dextromethorphan. Cited 17 November 2021. Available: https://www.rxlist.com/consumer_dextromethorphan/drugs-condition.htm
13. Drugs for cough. Med Lett Drugs Ther. 2018;60(1562):206-208.
14. Paul IM, Yoder KE, Crowell KR, Shaffer ML, McMillan HS, Carlson LC, et al. Effect of dextromethorphan, diphenhydramine, and placebo on nocturnal cough and sleep quality for coughing children and their parents. Pediatrics. 2004;114(1):e85–e90.
15. Canada.ca. Guidance Document: Non-prescription Oral Adult Antitussive Cough and Cold Labelling Standard. Cited 17 November 2021. Available:https://www.canada.ca/en/health-canada/services/drugs-health-

products/drug-products/applications-submissions/guidance-documents/nonprescription-drugs-labelling-standards/guidance-document-prescription-oral-adult-antitussive-cough-cold-labelling-standard.html.

16. Journey JD, Agrawal S, Stern E. Dextromethorphan Toxicity. [Updated 2021 Jun 28]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021. Available:https://www.ncbi.nlm.nih.gov/books/NBK538502/.
17. Brown GR, McLaughlin K, Vaughn K. Identifying and treating patients with synthetic psychoactive drug intoxication. JAAPA. 2018;31(8):1-5.
18. WHO. Dextromethorphan Pre-Review Report. Cited 17 November 2021. Available:https://www.who.int/medicines/areas/quality_safety/5.1Dextromethorphan_pre-review.pdf.

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