

# Audit of prescribing practices of topical corticosteroids in outpatient dermatology clinics in north Palestine

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تدقيق ممارسات وصف الكورتيكوستيرويدات الموضعية في العيادات الخارجية للأمراض الجلدية في شمال فلسطين

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**الخلاصة:** في إطار هذه الدراسة التي استهدفت تحليل أنماط وصف الكورتيكوستيرويدات الموضعية، تم جمع 802 من الوصفات العلاجية في العيادات الخارجية للأمراض الجلدية خلال المدة من حزيران/يونيو 2003 إلى أيلول/سبتمبر 2003، وذلك من جميع العيادات الجلدية الخاصة الاثني عشرة الموجودة في شمال فلسطين. وبلغ عدد مرات وصف الكورتيكوستيرويدات الموضعية 616 مرة من جملة الأدوية الموصوفة التي بلغ عددها 2458 دواءً. وبالنسبة لجميع الوصفات، كانت المعلومات المتعلقة بقوة الدواء، ومدة المعالجة، والكمية الموصى باستهلاكها، غير كافية؛ أما المعلومات المتعلقة بتكرار أخذ الدواء، وطريقة أخذه، وموضعه، فكانت كافية. ولوحظ أن الكورتيكوستيرويدات ذات النجاعة العالية وذات النجاعة العليا، قد تم وصفها لنحو 18٪ من المرضى؛ في حين تم وصف الكورتيكوستيرويدات المتوسطة النجاعة لنحو 50٪ من المرضى.

**ABSTRACT** To analyse the prescribing pattern of topical corticosteroids, 802 outpatient dermatology prescriptions were randomly collected during June 2003–September 2003 from all the 12 nongovernmental dermatological clinics in north Palestine. Of the 2458 medications prescribed, 616 were topical corticosteroids. In most prescriptions, information about strength, duration of treatment and quantity to be used was inadequate, while information regarding frequency, route and area of application was adequate. High efficacy and highest efficacy corticosteroids were prescribed for approximately 18% of patients; intermediate efficacy preparations were prescribed for approximately 50%.

## Audit des pratiques de prescription des dermocorticoïdes dans les services de consultations dermatologiques externes dans le nord de la Palestine

**RÉSUMÉ** Pour analyser les modes de prescription des dermocorticoïdes, 802 ordonnances prescrites dans les services de consultations dermatologiques externes ont été collectées entre juin et septembre 2003 dans l'ensemble des 12 services de consultations dermatologiques externes non gouvernementaux situés dans le nord de la Palestine. Sur les 2458 médicaments prescrits, 616 étaient des dermocorticoïdes. Dans la plupart des ordonnances, les informations concernant la concentration, la durée du traitement et la quantité à utiliser étaient inadéquates, tandis que celles concernant la fréquence, le mode et la zone d'application convenaient. Des corticoïdes de niveau d'efficacité élevée et très élevée ont été prescrits pour environ 18 % des patients ; des préparations d'efficacité intermédiaire ont été prescrites pour environ 50 %.

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## Introduction

The ultimate goal in dermatological therapy is to use the safest and least number of drugs in order to obtain the best possible effect in the shortest period at reasonable cost. One step to achieve this is to monitor, evaluate and therapeutically analyse the prescribing pattern of dermatological drugs. Such analysis will not only improve the standards of medical treatment at all levels in the health system, but will also help in the identification of problems related to drug use such as polypharmacy, drug–drug interaction and adverse drug reactions. The ultimate outcome of the dermatological prescription analysis will be a message to the prescribing physician to achieve rational, cost-effective medical care.

Among the drugs used in dermatology are vitamins/minerals, antibiotics, antiseptics, antifungals, antivirals, antihistamines, local anaesthetics, emollients, keratolytics, antiparasitics and topical corticosteroids. Topical corticosteroids, which were introduced in the late 1950s, have revolutionized the practice of dermatology and they still constitute one of the largest groups of drugs used in this discipline. They are divided into 5 groups according to their efficacy [1]. As a general rule, physicians should use the weakest possible corticosteroid that will treat the dermatological condition. Topical corticosteroids are mainly used for non-infective dermatologic disorders associated with inflammation such as psoriasis, atopic dermatitis, contact dermatitis and otitis externa [2–9].

Topical corticosteroids, like many other drugs, have many (sometimes serious) adverse reactions such as hypersensitivity, percutaneous absorption and tachyphylaxis [10–19]. The potent anti-inflammatory and immunosuppressant actions of oral, and sometimes topical, corticosteroids increase

susceptibility to bacterial and fungal infections, and therefore may preclude their use when infection is the known main cause of the condition [20]. In addition, children may be more vulnerable than adults to systemic effects of topical corticosteroids because percutaneous absorption is greater [17].

In order to minimize adverse cutaneous and systemic reactions, especially on prolonged use, rational use of topical corticosteroid should include the careful consideration of the patient's age, total area of application, quantity to be applied and efficacy of the selected corticosteroid. A study carried out in Nottingham showed that nearly three quarters of patients with atopic eczema worried about using topical steroids and almost a quarter were non-compliant because they were afraid of side effects such as skin thinning and growth retardation [21]. The authors concluded that health care professionals need to give patients more information about their topical corticosteroids so that treatment is not withheld from those who need it.

The purpose of this study is to evaluate and analyse the pattern of prescribing topical corticosteroids among outpatients attending dermatology clinics in north Palestine. The significance of such a study stems from the observation that self-medication and erratic use of drugs in general is noticeable among Palestinian people, and this can increase the risk of drug-related problems. Furthermore, the lack of continuing medical education for physicians in Palestine necessitates medical auditing of prescribing practices.

## Methods

The dermatological prescriptions of 802 outpatients attending nongovernmental dermatological clinics were collected at random from all areas in north Palestine

and analysed. The prescriptions collected during the study included prescriptions from all 12 nongovernmental dermatological clinics located in Qalqilia, Tulkaram, Jenin, Nablus and Jenin. The collection was made twice weekly for 3 months from June 2003 to September 2003. Patients attending nongovernmental clinics fill their prescriptions at nongovernmental (community or private) pharmacies and have to pay for their medications. The collection was made after dispensing the prescription at community pharmacies. We contacted all 152 pharmacies in the area and 43 agreed to participate. The pharmacists were informed about the project and were willing to facilitate the collection process. Permission was obtained from the local health authorities to conduct the project. The community pharmacists were asked to provide all dermatological prescriptions dispensed on randomly pre-set days (Sundays and Tuesdays) during the week for the assigned period of the project. For confidentiality purposes, names of patients were concealed after ensuring that the 802 prescriptions belonged to 802 different patients.

All the information contained in the 802 prescriptions was entered into *SPSS* for Windows, version 10. This included: age, sex, number of drugs, type of topical corticosteroid, strength/efficacy of the drug, site of application, dose and frequency of application, duration of therapy, quantity of drug to be dispensed, the nature of concomitantly prescribed drugs, whether products were locally produced or imported and the cost of the preparation. The official drug index in Palestine (Medic) was used to identify the active ingredients of each prescribed brand name [22]. These topical corticosteroid products were classified into 5 categories according to efficacy: lowest, low, intermediate, high and highest.

## Results

The total number of drugs prescribed for the 802 outpatients attending the dermatology clinics was 2458, i.e. a mean of 3.06 drugs per patient; 2.48 of these were topical preparations, the rest were oral preparations. The therapeutic classes of the 2458 drugs prescribed, along with their pharmaceutical dosage forms, are presented in Table 1. Injections were only rarely prescribed to outpatients attending dermatology clinics. The maximum number of drugs on a single prescription was 5 and the minimum was 1. For 452 patients (56.4%),  $\geq 3$  drugs were prescribed on a single prescription.

The majority (56.5%) of the prescriptions for topical corticosteroids were for males. Most (61.6%) of the patients receiving them were males and females under the age of 18 years (Table 2).

The total number of topical corticosteroid drugs prescribed for the 802 patients was 616. These were prescribed for 414 patients suggesting that sometimes more than 1 topical corticosteroid was prescribed on the same prescription for the same patient (mean 1.48 topical corticosteroids/patient). All topical corticosteroids were prescribed by brand name. More than 60 different brands were prescribed, only 4% of them were Palestinian products, the rest were imported.

The strength of the active constituent was not specified in the majority of the prescriptions. Frequency of administration, route of administration and area of application was specified in the majority of prescriptions while quantity and duration of treatment were not specified for the majority of patients (Table 3).

The intermediate efficacy corticosteroid betamethasone 17-valerate 0.1%, alone or in combination with other agents such

**Table 1 Main therapeutic categories prescribed for the 802 outpatients attending dermatological clinics**

Category of drug	No. of prescriptions				Main therapeutic agent (%)
	Oral	Topical	Injection	Total	
Emollient & antipruritic	0	29	0	29	Dexpanthiol (29%)
Antifungal	195	607	0	802	Clotrimazole (14%), miconazole (13.4%),
Antibacterial, antiviral & disinfectant	302	43	0	345	Minocycline (27.8%), erythromycine (18.9%).
Scabicide & pediculocide	0	41	0	41	Carbaryl (41%), lindane (39%)
Herpes	0	3	0	3	Acyclovir (100%)
Psoriasis, seborrhoea	0	16	0	16	Selenium sulfide (76%)
Acne	48	141	0	189	Retinoid (39%)
Wart remover	0	25	0	25	(Salicylic acid + 5- fluorouracil) (28%)
Topical corticosteroid (alone or in combination)	34	616	0	650	Betamethasone 17-valerate (22%)
Topical anaesthetic	0	2	0	2	Lignocaine (100%)
Alopecia	0	7	0	7	Minoxidil (100%)
Antihistamine	208	69	2	279	Hydroxyzine (71%)
Vitamin	57	0	0	57	B-complex (90%)
Miscellaneous	0	13	0	13	
Total	844	1612	2	2458	

as neomycin (0.5% neomycin sulfate), was the most commonly prescribed topical corticosteroid, followed by the highest efficacy corticosteroid, clobetasol propionate (Table 4).

Less than one third of the topical corticosteroids were prescribed alone: most were prescribed as combination products containing antimicrobials or other types of agents (Table 4).

**Table 2 Age and sex distribution of patients prescribed topical corticosteroids (n = 414)**

Age (years)	Males	Females	Total	
			No.	%
< 18	130	125	255	61.6
≥ 18	104	55	159	38.4
Total (%)	234 (56.5)	180 (43.8)	414	100

**Table 3 Details of information not included on prescriptions for topical corticosteroids (n = 616)**

Parameter	Not specified	
	No.	%
Generic name	616	100
Strength	616	100
Quantity to be used	540	87.7
Duration of treatment	441	71.6
Area (site) of application	228	37.0
Route of administration	148	24.0
Frequency of administration	45	7.3

## Discussion

Several studies have addressed the issue of dermatological drug prescribing patterns. Some of these have indicated inappropriate utilization or over-utilization of potent, topical corticosteroids. In a study conducted in the United States of America between 1989 and 1991, dermatologists were 3.9 times more likely to prescribe very high potency steroids than were other physicians, and physicians other than dermatologists were 8.4 times more likely than dermatologists to prescribe combination agents containing moderate- or high-potency topical

corticosteroids plus an anti-infective agent [23]. Another American study analysed data from the National Ambulatory Medical Care Survey for visits to paediatricians from 1990 to 1994 and isolated visits at which a topical corticosteroid agent or clotrimazole-betamethasone dipropionate was prescribed. Paediatricians rarely used high-potency topical corticosteroids, but their use of clotrimazole-betamethasone dipropionate was mostly for the youngest children, in whom such corticosteroid use is least appropriate. The authors concluded that some paediatricians may be unaware that this drug has a high-potency corticosteroid component [24].

In a study carried out in India, prescribing of topical corticosteroids was studied in 200 patients attending a dermatology outpatient clinic. Potent topical corticosteroids were commonly used in 86 (43%) patients. The quantity of topical steroid was mentioned for only 4% of patients, frequency of administration was specified in 77%, the site of administration in 69% and duration of treatment in 55% [25]. In another study carried out in Delhi, India, at a tertiary hospital, the authors found that in the dermatology department, the mean number of drugs per prescription was 2.6, rate of drug

**Table 4 Efficacy and type of topical corticosteroid prescribed (n = 616)**

Efficacy	Formulation				Total	
	Alone		In combination with antimicrobials		No.	%
	No.	%	No.	%		
Lowest	17	2.8	111	18.0	128	20.8
Low	8	1.3	57	9.3	65	10.6
Intermediate	61	9.9	252	40.9	313	50.8
High	11	1.8	13	2.1	24	3.9
Highest	86	13.9	0	–	86	13.9
Total	183	29.7	433	70.3	616	100

prescribing by generic name was 6.98%, antibiotics accounted for 46.86% of prescriptions and injections (mainly antihistamines) 6.76%. They reported that 23% of the total drugs prescribed were from the Delhi State Essential Drugs Formulary, i.e. they were generic [26].

The results of this study indicate that topical corticosteroids are commonly prescribed for outpatients attending dermatology clinics in north Palestine (51.6%). The prescription analysis shows that prescribing information was inadequate in the majority of cases. For example, the quantity of the corticosteroid to be applied was not mentioned in 87.7% of prescriptions and duration of use not mentioned in 71.6%. This may result in under-utilization of the preparation and subsequent sub-therapeutic outcome. There is also the possibility of over-utilization of the topical corticosteroid by the patient, with subsequent risk of hypothalamic-pituitary-adrenal axis suppression.

The possibility of inappropriate use of topical corticosteroids is facilitated by the fact that, although there are few published reports on the practice [27], it is a common occurrence in Palestine for most drugs to be sold in community pharmacies without a physician's order, and prescriptions in general are dispensed several times without regard to the number of refills, which in most cases is not written on the prescription.

In this study, none of the topical corticosteroids were prescribed by their generic names. Using brand names for prescribing may sometimes create dispensing errors. Drugs with similar brand names but different ingredients might mistakenly be switched [28]. Furthermore, in Palestine, there is a wide range in the cost of various branded products for the same generic drug. This means that prescribing drugs by their

generic names could minimize the cost and thus increase prescription compliance. Unfortunately, 67.4% of topical corticosteroid products prescribed were not products of local Palestinian pharmaceutical companies, whose prices are usually lower than those of the imported brand-name equivalents. One possible reason for this prescribing behaviour is lack of trust in the quality of the locally produced pharmaceuticals. Another possible reason is that the undergraduate medical students are not taught proper prescription writing [29] and when they graduate they mimic the prescribing behaviour of their more experienced colleagues, who might be influenced by the strong marketing campaigns of foreign pharmaceutical companies.

Prescription analysis shows that antifungal drugs were the most commonly prescribed class of drugs, suggesting that fungal infections are the most common type of dermatological condition encountered in north Palestine. Unfortunately, there are no published epidemiological studies of infectious diseases in Palestine that would explain this finding. Cross tabulation of antifungal drugs with topical corticosteroid drug prescribing shows that 104 patients were prescribed an antifungal drug along with a topical corticosteroid and that 72 patients were prescribed topical drugs containing a combination of an antifungal plus a topical corticosteroid (e.g. miconazole nitrate 2% plus hydrocortisone acetate 1%).

The use of topical corticosteroids during infection may be problematic, even in healthy individuals with an intact immune system. For example, the use of a topical corticosteroid during varicella infection has been reported to cause exacerbation of the viral infection [30]. Topical corticosteroids are often less effective than antifungal drugs in treating fungal infections [31,32]. Furthermore, when topical corticosteroids

are combined with potent antifungal drugs, they may interfere with the therapeutic action of the antifungal medications, thus exacerbating the infection (e.g. tinea incognito) [33–35]. Prescribing a corticosteroid/antifungal combination has been found to be more common among non-dermatologists [36]. This suggests that dermatologists are more aware than non-dermatologists of the lack of efficacy of topical corticosteroids in the treatment of these infections. However, in our study, dermatologists had some tendency to prescribe antifungal/corticosteroid combination.

In conclusion, the present study reveals that topical corticosteroids of intermediate and highest efficacy are commonly used for

outpatients attending dermatology clinics in north Palestine. Inadequate prescribing information was a clear characteristic of the dermatological prescriptions containing topical corticosteroids. Some irrational combinations of topical corticosteroids may be prescribed. Unfortunately, the curricula of medical colleges in Palestine do not include a course on proper prescribing, which might reflect negatively on the future of medical practice. There is, therefore, a need to put more emphasis on rational and complete prescribing on the undergraduate medical curriculum in Palestine. Continuing medical education for practising physicians is also greatly needed.

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