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### RESEARCH ARTICLE

#### PREVALENCE OF MISUSE OF TOPICAL CORTICOSTEROIDS AMONG POPULATIONS IN WESTERN REGION OF SAUDI ARABIA.

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##### Key words:-

Topical corticosteroids (TCS), Misuse, Non-Prescription Medicines (NPM) Western Region, Saudi Arabia

#### Abstract

This cross - sectional study measured the prevalence of misuse and awareness of Western region populations related to topical corticosteroids (TCS) use and its effects. It also compared the variation of level of awareness and use according to gender, age group and level of education. A sample of 458 participants were selected randomly where a well designed validated self study questionnaire was developed for data collection. Collected data was analyzed using SPSS Ver. 20 where both descriptive and analytical analysis was applied. Main findings included that the problem of TCS and its abuse, misuse, and minimum awareness related to adverse effects to topical drugs have been widespread in Saudi Arabia specially at the Western region of the Kingdom. The study recommended to develop a national policy on Non-Prescription Medicines (NPM) and it should be supported to limit self-medication practice among the Saudi population and to increase their awareness relevant to misuse and adverse side effects of topical corticosteroids. Future national studies need to explore the safety and effectiveness of using topical corticosteroids.

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#### Introduction:-

Topical corticosteroids (TCS) are of great value in treating a wide spectrum of dermatological diseases and since the time of its introduction in 1951, a new therapeutic era in dermatology has been emerged (1). The development of super potent corticosteroid in 1974 added more cutaneous diseases to the list of TCS indications. Meanwhile TCS misuse also appeared as a common problem adding a new complication which has been reported by Variety of investigators (2). Chronic misuse of TCS on the face produced a clinical condition which was described by various names, like light sensitive seborrheid, perioral dermatitis (3), rosacea-like dermatitis (4), steroid induced rosacea-like dermatitis (4), Steroid Rosacea (5), and steroid dermatitis resembling Rosacea (6).

Topical corticosteroids (TCS) are perhaps the most widely used agents amongst the therapeutic armamentarium and have been rightly acknowledged as a wonder drug in dermatological therapy (7). They provide immediate subjective and objective relief in symptoms in almost all inflammatory dermatoses thus justifying its rampant use. This usefulness of the drug has become a double edged weapon and made alarming proportion of individuals vulnerable to its abuse leading to serious local adverse effects especially on face (8). Vast sections of society have become victims of this magic drug owing to the craze of beautification leading to a virtual epidemic of acneform eruptions,

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steroid rosacea/steroid dependent facies, telangiectasia, hypertrichosis and premature aged appearance of face. Aim of our study is to make awareness about misuse of TCS.

The adverse effects of TCS tend to occur with prolonged treatment and depend on potency of TS, its vehicle and site of application. The most common include atrophy, striae, rosacea, perioral dermatitis, acne and purpura. Hypertrichosis, pigment alteration, delayed wound healing and exacerbation of skin infections are less frequent (14). Systemic adverse effects from TS have also been described and they are more likely to develop when highly potent TS are used for prolonged periods on thin skin (e.g. face) or on raw/inflamed surfaces (13, 14).

#### Research Objectives:-

- To measure the Prevalence of misuse of topical corticosteroids among populations in western region of Saudi Arabia.
- To assess the level of awareness of Western region populations related to corticosteroids use and its effects.
- To compare if there any statistical variation between the level of use of corticosteroids and gender.
- To compare if there any statistical variation between the level of use of corticosteroids and age group.
- To compare if there any statistical variation between the level of use of corticosteroids and educational level.

#### Materials and Methods:-

##### Study Design and Sample Size:-

A prospective cross sectional study was conducted in Western Region of Saudi Arabia from October to December 2016. Sample of 458 subjects were selected randomly within the age of 20 up to 65 years old.

##### Methods and Tools of Data Collection:-

A validated self-administered pretested questionnaire was devolved and filled by all participants. The questionnaire consisted demographic variables and study variables to achieve study objectives.

##### Inclusion Criteria:-

- Saudi nationality
- Male and female between (20-65) years old.
- Western region citizens

##### Data Analysis:-

Collected data was analyzed using SPSS version 20 where descriptive analysis was conducted for basic or demographic data while Chi Square test was applied to calculate correlation between different dependent and independent variables.

##### Ethical Approval:-

Approval for research was obtained from Institutional Research Ethics Committee.

#### Results:-

##### Section 1:- Demonstrates Demographic Data

Table 1:- Shows The Distribution Of Participants According To The Demographic Data

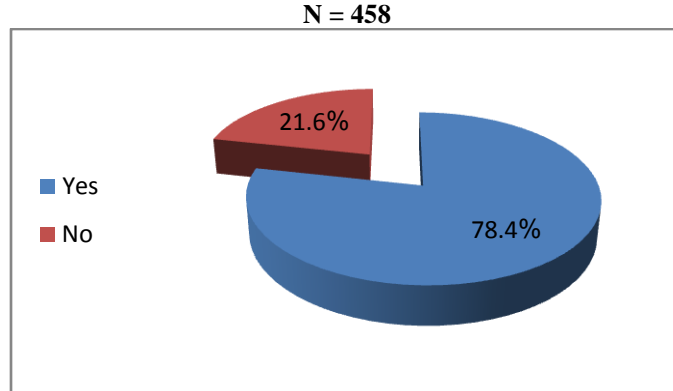
N = 458

Variable	Category	Fr.	%
Gender	Male	137	30
	Female	321	70
Age Group in Years	< 20	50	11
	21 - 40	302	66
	41 - 60	101	22
	> 61	5	1
Educational Level	Secondary or below	105	23
	Under Graduate	330	72
	Post Graduate	22	5

\* Most of participants were female (70%), within the age group of 21 - 40 years old (66%) and under graduate students (72%).

**Section 2:- Demonstrates Knowledge and practices towards topical corticosteroids**

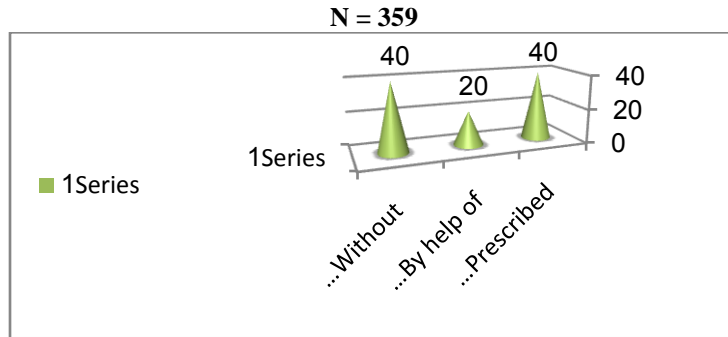
Table and Figure 2 Show The Distribution Of Participants According To The Use of topical corticosteroids



Use of corticosteroids	Fr.	%
Yes	359	78.4
No	99	21.6

The use of topical corticosteroids among participants was 78%.

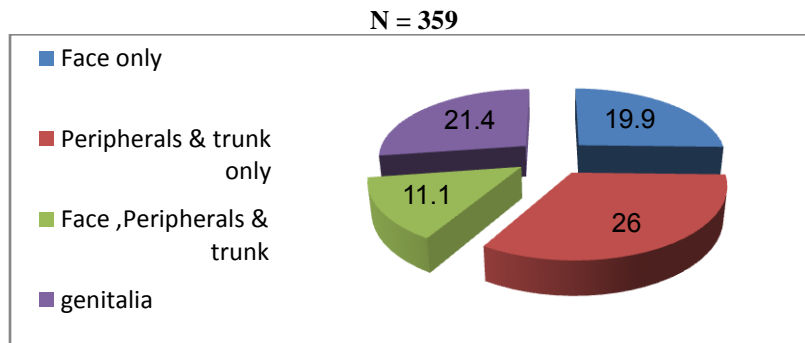
Table and Figure 3 Show The Distribution Of Participants According To The Presence Of Prescription for topical corticosteroids



Source of corticosteroids	Fr.	%
Prescribed by physician	152	40.0
By help of pharmacist	55	20.0
Without any prescription	152	40.0

Only 40 % of participants used topical corticosteroids as prescribed by physician who is only authorized person to give different medications

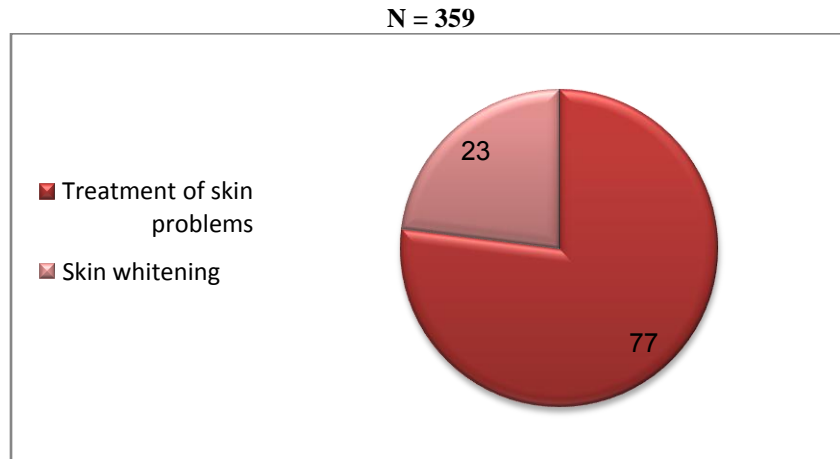
Table and Figure 4 Show The Distribution Of Participants According To The body parts where topical corticosteroids used



Body part	Yes	
	Fr.	%
Face only	91	19.9
Peripherals & trunk only	119	26.0
Face ,Peripherals & trunk	51	11.1
genitalia	98	21.4

Near to half of participants used topical corticosteroids on face 19.9%

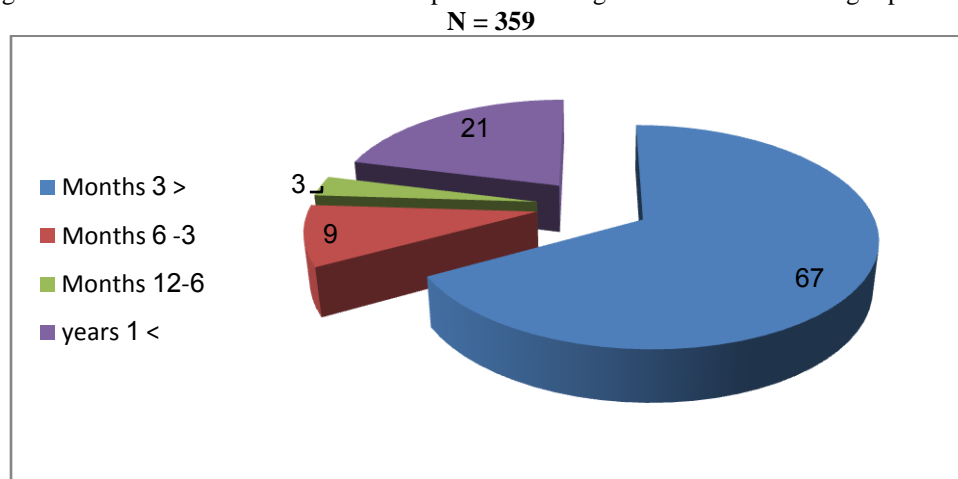
Table and Figure 5 Show The Distribution Of Participants According To The Reasons for use of topical corticosteroids



Reason for use of corticosteroids	Yes	
	Fr.	%
Treatment of skin problems	278	77
Skin whiteness	81	23

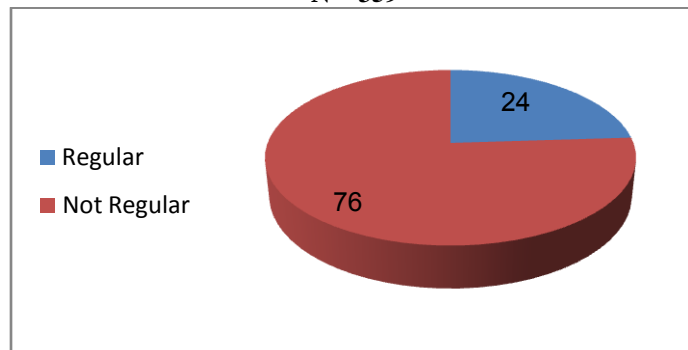
About 23 % of participants used topical corticosteroids for other purposes rather than treatment.

Table and Figure 6 Show The Distribution Of Participants According To The Period of using topical corticosteroids



Period of use of corticosteroids	Fr.	%
< 3 Months	242	67.0
3- 6 Months	33	9.0
6-12 Months	10	3.0
> 1 years	74	21.0

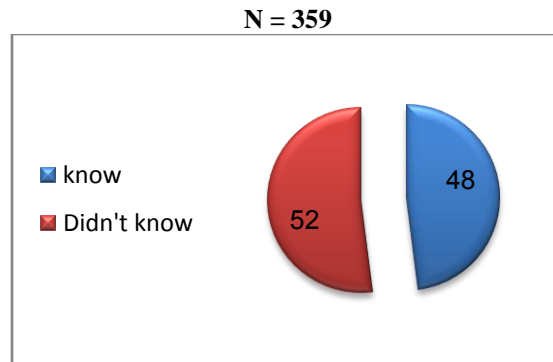
All participants used topical corticosteroids for at least **THREE** months, while about 21% used it for one year, Table and Figure 7 Show The Distribution Of Participants According To The way of using topical corticosteroids  
**N = 359**



Frequency of using corticosteroids	Fr.	%
Regular	85	24.0
Not Regular	274	76.0

About 24 % of participants used topical corticosteroids on regular basis

Table and Figure 8 Show The Distribution Of Participants According To Their Knowledge about side effects of topical corticosteroids



Side effects of corticosteroids	Fr.	%
know	174	48.0
Didn't know	185	52.0

Near to half of participants (52%) didn't know the side effects of

Table 9:- Shows The Distribution Of Participants According To Their use of topical corticosteroids and the gender

Regular use of topical corticosteroids			gender		Total	Sig
			male	female		
	yes	Count	24	55	79	0.05
		% within regular	30.4%	69.6%	100.0%	
		% within gender	23.1%	22.5%	22.7%	
		% of Total	6.9%	15.8%	22.7%	
	no	Count	80	189	269	
		% within regular	29.7%	70.3%	100.0%	
		% within gender	76.9%	77.5%	77.3%	
		% of Total	23.0%	54.3%	77.3%	
Total		Count	104	244	348	
		% within regular	29.9%	70.1%	100.0%	
		% within gender	100.0%	100.0%	100.0%	
		% of Total	29.9%	70.1%	100.0%	

There was statistical relationship between regular use of topical corticosteroids and the gender, female were use more regularly than male, P Value < 0.05.

Table 10:- Shows The Distribution Of Participants According To Their knowledge related to side effects of topical corticosteroids and the gender

knowledge related to side effects of topical corticosteroids		gender		Total	Sig.	
		male	female			
Know	Count	23	111	134	0.00	
	% within side effects	17.2%	82.8%	100.0%		
	% within gender	21.5%	44.9%	37.9%		
	% of Total	6.5%	31.4%	37.9%		
	Didn't Know	Count	84	136		220
		% within side effects	38.2%	61.8%		100.0%
		% within gender	78.5%	55.1%		62.1%
		% of Total	23.7%	38.4%		62.1%
Total	Count	107	247	354		
	% within side effects	30.2%	69.8%	100.0%		
	% within gender	100.0%	100.0%	100.0%		
	% of Total	30.2%	69.8%	100.0%		

There was statistical relationship between knowledge related to side effects of topical corticosteroids and the gender, female were more knowledgeable than male, P Value < 0.05.

Table 11:- Shows The Distribution Of Participants According To The Source of topical corticosteroids and Gender

Source of topical corticosteroids		gender		Total	Sig.	
		male	female			
Physician	Count	44	103	147	0.01	
	% within who prescript	29.9%	70.1%	100.0%		
	% within gender	41.1%	42.4%	42.0%		
	% of Total	12.6%	29.4%	42.0%		
	Pharmacist	Count	25	29		54
		% within who prescript	46.3%	53.7%		100.0%
		% within gender	23.4%	11.9%		15.4%
		% of Total	7.1%	8.3%		15.4%
	without any prescription	Count	19	71		90
		% within who prescript	21.1%	78.9%		100.0%
		% within gender	17.8%	29.2%		25.7%
		% of Total	5.4%	20.3%		25.7%
friends and relatives or others	Count	19	40	59		
	% within who prescript	32.2%	67.8%	100.0%		
	% within gender	17.8%	16.5%	16.9%		
	% of Total	5.4%	11.4%	16.9%		
Total	Count	107	243	350		
	% within who prescript	30.6%	69.4%	100.0%		
	% within gender	100.0%	100.0%	100.0%		
	% of Total	30.6%	69.4%	100.0%		

There was statistical relationship between the source of topical corticosteroids and the gender, females were more use un prescript topical corticosteroids than others, P Value < 0.05.

Table 12:- Shows The Distribution Of Participants According To Their knowledge related to side effects of topical corticosteroids and the level of education

knowledge related to side effects of topical corticosteroids and the level of education			Level of education			Total	Sig.	
			secondary or below	university	Post graduate			
yes	Count		25	102	7	134	0.04	
	% within side effects		18.7%	76.1%	5.2%	100.0%		
	% within education		31.6%	39.2%	41.2%	37.6%		
	% of Total		7.0%	28.7%	2.0%	37.6%		
no	Count		54	158	10	222		
	% within side effects		24.3%	71.2%	4.5%	100.0%		
	% within education		68.4%	60.8%	58.8%	62.4%		
	% of Total		15.2%	44.4%	2.8%	62.4%		
Total			Count	79	260	17		356
			% within side effects	22.2%	73.0%	4.8%		100.0%
			% within education	100.0%	100.0%	100.0%	100.0%	
			% of Total	22.2%	73.0%	4.8%	100.0%	

There was statistical relationship between knowledge related to side effects of topical corticosteroids and the level of education, university participants were more knowledgeable than others, P Value < 0.05.

Table 13:- Shows The Distribution Of Participants According To Their use of topical corticosteroids and the level of education

Use of topical corticosteroids			Level of education			Total	Sig.	
			secondary or below	university	Post graduate			
regular	yes	Count	22	57	2	81	0.029	
		% within regular	27.2%	70.4%	2.5%	100.0%		
		% within education	28.2%	22.4%	11.8%	23.1%		
		% of Total	6.3%	16.3%	.6%	23.1%		
	no	Count	56	198	15	269		
		% within regular	20.8%	73.6%	5.6%	100.0%		
		% within education	71.8%	77.6%	88.2%	76.9%		
		% of Total	16.0%	56.6%	4.3%	76.9%		
Total			Count	78	255	17		350
			% within regular	22.3%	72.9%	4.9%		100.0%
			% within education	100.0%	100.0%	100.0%	100.0%	
			% of Total	22.3%	72.9%	4.9%	100.0%	

There was statistical relationship between regular use of topical corticosteroids and the level of education, university participants were more use than others, P Value < 0.05.

Table 14:- Shows The Distribution Of Participants According To The Source of topical corticosteroids and the level of education

Source of topical corticosteroids		Level of education			Total	Sig.	
		secondary or below	university	Post graduate			
Physician	Count	31	108	11	150	0.02	
	% within who prescript	20.7%	72.0%	7.3%	100.0%		
	% within education	40.3%	41.9%	64.7%	42.6%		
	% of Total	8.8%	30.7%	3.1%	42.6%		
	Pharmacist	Count	19	34	0		53
		% within who prescript	35.8%	64.2%	.0%		100.0%
		% within education	24.7%	13.2%	.0%		15.1%
		% of Total	5.4%	9.7%	.0%		15.1%
	without any prescription	Count	19	69	2		90
		% within who prescript	21.1%	76.7%	2.2%		100.0%
		% within education	24.7%	26.7%	11.8%		25.6%
		% of Total	5.4%	19.6%	.6%		25.6%
friends and relatives or others	Count	8	47	4	59		
	% within who prescript	13.6%	79.7%	6.8%	100.0%		
	% within education	10.4%	18.2%	23.5%	16.8%		
	% of Total	2.3%	13.4%	1.1%	16.8%		
Total	Count	77	258	17	352		
	% within who prescript	21.9%	73.3%	4.8%	100.0%		
	% within education	100.0%	100.0%	100.0%	100.0%		
	% of Total	21.9%	73.3%	4.8%	100.0%		

There was statistical relationship between the source of topical corticosteroids and the level of education, university participants were more use un prescript topical corticosteroids than others, P Value < 0.05.

Table 15:- Shows The Distribution Of Participants According To The Regular Use of topical corticosteroids and age

Regular Use of topical corticosteroids		Age in Years				Total	Sig.
		< 20	21 - 40	41 - 60	> 61		
yes	Count	4	51	11	2	68	0.03
	% within regular	5.9%	75.0%	16.2%	2.9%	100.0%	
	% within age	12.5%	27.0%	16.4%	66.7%	23.4%	
	% of Total	1.4%	17.5%	3.8%	.7%	23.4%	
no	Count	28	138	56	1	223	
	% within regular	12.6%	61.9%	25.1%	.4%	100.0%	
	% within age	87.5%	73.0%	83.6%	33.3%	76.6%	
	% of Total	9.6%	47.4%	19.2%	.3%	76.6%	
Total	Count	32	189	67	3	291	
	% within regular	11.0%	64.9%	23.0%	1.0%	100.0%	
	% within age	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	11.0%	64.9%	23.0%	1.0%	100.0%	

There was statistical relationship between the source of topical corticosteroids and the age group, age of 21 - 40 were more regular of topical corticosteroids than others, P Value < 0.05.



Table 16:- Shows The Distribution Of Participants According To The Source of topical corticosteroids and age

Source of topical corticosteroids		age				Total	Sig.
		< 20 years	21 - 40	41 - 60	> 61		
Physician	Count	15	85	27	1	128	0.75
	% within who prescript	11.7%	66.4%	21.1%	.8%	100.0%	
	% within age	45.5%	45.7%	38.0%	33.3%	43.7%	
	% of Total	5.1%	29.0%	9.2%	.3%	43.7%	
Pharmacist	Count	5	25	11	0	41	
	% within who prescript	12.2%	61.0%	26.8%	.0%	100.0%	
	% within age	15.2%	13.4%	15.5%	.0%	14.0%	
	% of Total	1.7%	8.5%	3.8%	.0%	14.0%	
without any prescription	Count	6	53	19	1	79	
	% within who prescript	7.6%	67.1%	24.1%	1.3%	100.0%	
	% within age	18.2%	28.5%	26.8%	33.3%	27.0%	
	% of Total	2.0%	18.1%	6.5%	.3%	27.0%	
friends and relatives or others	Count	7	23	14	1	45	
	% within who prescript	15.6%	51.1%	31.1%	2.2%	100.0%	
	% within age	21.2%	12.4%	19.7%	33.3%	15.4%	
	% of Total	2.4%	7.8%	4.8%	.3%	15.4%	
Total	Count	33	186	71	3	293	
	% within who prescript	11.3%	63.5%	24.2%	1.0%	100.0%	
	% within age	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	11.3%	63.5%	24.2%	1.0%	100.0%	

There was no statistical relationship between the source of topical corticosteroids and the age, P Value > 0.05.

Table 17:- Shows The Distribution Of Participants According To Their knowledge to the side effects of topical corticosteroids and age

knowledge to the side effects of topical corticosteroids		Age in Years				Total	Sig.
		< 20	21 - 40	41 - 60	> 61		
Know	Count	13	76	28	1	118	0.99
	% within side effects	11.0%	64.4%	23.7%	.8%	100.0%	
	% within age	39.4%	40.0%	40.0%	33.3%	39.9%	
	% of Total	4.4%	25.7%	9.5%	.3%	39.9%	
Didn't Know	Count	20	114	42	2	178	
	% within side effects	11.2%	64.0%	23.6%	1.1%	100.0%	
	% within age	60.6%	60.0%	60.0%	66.7%	60.1%	
	% of Total	6.8%	38.5%	14.2%	.7%	60.1%	
Total	Count	33	190	70	3	296	
	% within side effects	11.1%	64.2%	23.6%	1.0%	100.0%	
	% within age	100.0%	100.0%	100.0%	100.0%	100.0%	
	% of Total	11.1%	64.2%	23.6%	1.0%	100.0%	

There was no statistical relationship between the participants knowledge towards side effects and the age group, P Value < 0.05.

**Discussion:-**

This study measured the prevalence of misuse and awareness of Western region populations related to corticosteroids use and its effects. It also compared the variation of level of awareness and use according to gender, age group and level of education.

Misuse of topical corticosteroids appears to be a common problem worldwide, as stated by study, the prevalence of topical corticosteroids misuse was 60% (By help of pharmacist or Without any prescription). The use of TCS for skin lightening was statistically significant (23%). This may also explain the female predominance in this study.

As mentioned in the table (1) 458 individuals were participated in this study where most of them were female (70%), within age group of 21 - 40 years old (66%) and under graduate (72%). The showed that use of topical corticosteroids among participants was 78%. Only 33 % of participants used topical corticosteroids as prescribed by physician who is only authorized person to give different medications while the rest of participants used topical corticosteroids without any prescription or through the advice of pharmacist who is not authorized to give medication. Near to half of participants used topical corticosteroids on face and peripheral, 20% and 25%. About 39 % of participants used topical corticosteroids for other purposes rather than treatment. All participants used topical corticosteroids for at least **THREE** months. Majority of participants (62%) didn't know the side effects of corticosteroids.

In recent years, there has been an increasing trend for self-medication with non-prescription medicines (NPM). In parallel, more products have been deregulated for purchase without a prescription (11). Population-based survey in developed countries such as Australia, Scotland, United Kingdom and other Asian countries like Taiwan and Singapore found that between a half and two-thirds of the population used NPM, including complementary and over-the-counter medicines (OTC) (12).

Misuse of topical corticosteroids is very common in patients with facial dermatoses. Many patients prefer to use topical steroids as a fairness cream (9). To minimize adverse cutaneous and systemic reactions, especially with prolonged use, the rational use of topical steroids should include careful consideration of the patient's age, total area of application, quantity to be applied, efficacy of the selected corticosteroid, and frequency of application (10). Hence, one step to achieve rational prescribing is periodic auditing of prescriptions.

As shown in tables 8,9 and 10 there was statistical relationship between regular use of topical corticosteroids, side effects, its source and the gender, female were use more regularly, more knowledgeable and more use un prescript topical corticosteroids than others, P Value < 0.05.

As shown in tables 11,12 and 13 there was statistical relationship between regular use of topical corticosteroids, side effects, its source and the educational level, under graduate participants were use more regularly, more knowledgeable and more use un prescript topical corticosteroids than others, P Value < 0.05.

As shown in tables 14 there was statistical relationship between regular use of topical corticosteroids, and the educational level, age group of 21- 40 years old were use more regularly than others, P Value < 0.05 while as shown in table 15 and 16 there was no statistical relationship between the source of topical corticosteroids and knowledge of side effects and the age group, P Value > 0.05.

### **Conclusion:-**

Thus as indicated by data in our study, the problem of TCS and its abuse, misuse, and minimum awareness related to adverse effects to topical drugs have been widespread in Saudi Arabia and specially at the Western region of the Kingdom.

Western region consumers mainly purchased Non Prescript Medications NPM to treat problems of skin, skin lightening and other purposes. The choice of NPM was associated with socio-demographic profile such as gender, age and educational level.

The development of a national policy on NPM should be supported to limit self-medication practice among the Saudi population and to increase their awareness relevant to misuse and adverse side effects of topical corticosteroids. Future national studies need to explore the safety and effectiveness of using topical corticosteroids.

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