MAR Diabetes, Endocrinology and Obesity (2022) 2:2
Research Article

Dermatological Diseases in Tabuk Primary Health Care Centers: Frequency, and Physicians 'Knowledge, Attitude and Practice

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Received: 20 September 2022

Published: 19 October 2022

DOI: 10.5281/zenodo.10020741

Abstract

Background: *The current worldwide health care system relies heavily on primary care physicians to manage a variety of conditions, including dermatologic problems.*

Objectives: *To assess knowledge, attitudes and practice among primary health care physicians in Tabuk city regarding common dermatological problems and correlate their level of knowledge and practice gap with their background characteristics.*

Subjects and Methods: *A cross-sectional study was conducted included all primary health care physicians affiliated to a primary care centers within the study area since at least 3 months. A validated self– administered questionnaire was utilized for data collection. It included questions about socio-demographic characteristics of the participants as well as questions to assess their knowledge, attitude and practice regarding common dermatological problems.*

Results: *The study included 132 primary healthcare physicians with a response rate of 81%. Approaching half of them (47%) aged < 30 years whereas 45.5% aged between 31 and 40 years. They were equally distributed between males and females. Majority of primary healthcare physicians (85.6%) had insufficient knowledge regarding common dermatological disorders. Older physicians (>40 years old), p=0.001 and those attended training courses in dermatology, p=0.026 were more likely have sufficient knowledge regarding dermatological disorders. Lack of training (68.2%), lack of clinical guidelines (15.2%) and lack of educational materials (12.1%) were the commonest reported barriers that PHC physicians` face regarding management of dermatological disorders.*

Conclusions: *Common dermatological disorders are relatively frequent in PHC practice in Tabuk. Majority of primary health care physicians had insufficient knowledge regarding management of common skin disorders. Majority of physicians in the present study believed that they should have a role in the management of common skin disorders.*

List of Abbreviations

Abbreviation Description

UV Ultraviolet

PHCP Primary health care physicians

NWAFH North West Armed Forces hospital

KSA Kingdom of Saudi Arabia

KAP knowledge, attitudes and practice

PCPs Primary Care Physicians

PHC Primary health care

MOH Ministry of Health

KSA Kingdom of Saudi Arabia

GPs General practitioners

SPSS Statistical Package for Social Sciences

$\chi 2$ Chi-square test

Introduction

Background

Skin diseases are very common, affecting approximately 20–33% of the population at any one time. [1] The majority of skin diseases are not life threatening, but the psychological effects of relatively minor skin abnormalities can often cause more distress to the patients than other more serious medical disorders. [2]

The skin is very important organ for human being in many ways; it is a sensitive dynamic boundary between the body and the outside world, essential for controlling water and heat loss, has defensive functions against infections and infestations, as well as protective properties against irritants, allergens and UV radiation, the largest organ in the body and is not a simple 'inert' barrier, an important sensory organ that is able to distinguish pain, touch, itch, heat and cold, an important organ for social and sexual contact, and contains

other important structures, including hair, blood vessels, nerves, sweat and sebaceous glands. In addition, vitamin D is synthesized in the skin. Thus, skin failure can be as worthy of medical attention as cardiac or renal failure as it influences all of the functions just described. [3]

Also the development of skin disease is influenced by internal factors, such as age, gender, and heredity as well as external factors, such as geographic region, climate, socioeconomic status, and personal habits, The prevalence of skin diseases differs between regions as a result of these factors.

Chronic suffering rather than mortality is the characteristic of most skin diseases. In addition to physical symptoms, perhaps the most significant way in which skin disease affects people is the effect it has on psychological well-being. [3]

Disfiguring skin disease in visible sites such as the face (e.g. acne) can result in loss of self-esteem, depression and poorer job prospects.[4] Indeed, quality-of-life scores for people with skin disease are often worse than for people with more traditional 'medical' disorders such as angina and hypertension.[5]

The skin is therefore a sensitive and dynamic organ that has a crucial and frequently underestimated social function. The study of the magnitude of skin diseases and their impacts on patient lives is captured with disciplines such as epidemiology and health services research. Further, these research arenas depend on standardized case dentitions and an understanding of the limitations of diagnostic tests and potential biases.[2]

The moderate morbidity rate of skin diseases multiplied by their high prevalence rate places skin disease among the top four chronic disease groups when entire communities are considered. In addition, several important skin diseases such as skin cancer, atopic dermatitis, venous stasis ulcers and psoriasis are becoming more common.[5]

Unlike most other medical specialties, dermatology as a specialty has between 1000 and 2000 diseases. However, fewer than ten categories of skin disorders account for over 70% of dermatologic consultations: skin cancer, acne, atopic dermatitis, psoriasis, viral warts, infective skin disorders, benign tumors and vascular lesions, leg ulceration, and contact dermatitis (and other eczema).[5]

The literature on the patterns of general and specific skin diseases is scanty, and only a few published reports are available on Saudi Arabia.[6] and regarding the knowledge attitude practice in primary health care to common skin disease more fewer published report are available on our area. community-based studies are the best to determine the incidence of a particular disease, they are difficult to carry out in dermatological

field. As such, most of the studies to determine the incidence or prevalence of dermatological diseases are based upon hospital-outpatients.[7, 8]

According to Royal College of General Practitioners Curriculum 2010, primary health care physicians you should be able to demonstrate appropriate history-taking for patients with skin problems, including family history, chemical contacts, occupation and drug usage, recognize the importance of skin-specific symptoms, understand how to recognize common skin conditions in primary care and prescribe appropriate treatment, able to distinguish benign from malignant skin conditions and make appropriate referrals, recognize rarer but potentially important conditions and know when to refer to secondary care, recognize emergency skin conditions and act appropriately, aware of local, alternative referral resources, know about shared care protocols with secondary care for the follow up of patients with skin cancer and finally consider reviewing all referrals to establish whether the input of secondary care is 'value added' and to establish any learning points for similar cases. [9]

The current worldwide health care system relies heavily on primary care clinics to manage a variety of conditions, including dermatologic problems. In fact, dermatologists treat only 30%–40% of patients with skin disease. This leaves the majority of skin disorders to be seen by clinicians in other specialties, 22% of whom are family physicians.[10]

As medical knowledge expands, primary health care physicians face an ever-increasing challenge in diagnosis and treatment of skin disorders. They must be skilled in disease recognition and management, as well as understanding when to refer patients to the appropriate specialist.

Rationale of the study:

Dermatological problems have a high burden in our community as seen from my experience in working in primary health care centers. So, it is important to assess knowledge, attitude and practice of primary health care physicians about them.

Epidemiological studies to determine the exact burden of skin diseases are important for proper health care planning.

Up to our knowledge, this important subject was not studied in our region.

Aim of the study

To have an overview of the magnitude of dermatological problems in our community as well as assess readiness of primary health care physicians to face this problem

Study Objectives:

This study was carried out to:

Assess knowledge, attitudes and practice (KAP) among Primary health care physicians (PHCP) in Tabuk City regarding Common dermatological problems.

Correlate the level of knowledge and practice gap with background characteristics of the physicians.

Find out the recommendations to improve the knowledge of common dermatological disorders among physicians.

Subjects and Methods

Study design: Cross sectional design.

Study area: This study was conducted in Tabuk City, which is located 2200 feet above sea level. It has a population of 550000 (2010 census). [20]

Within boundaries of Tabuk city, there are 23 primary health care centers belonging to Ministry of health and 3 main primary health care centers (NWAFH, Al-Razi and main airbase) in addition to 13 clinics belonging to military sector. They include 110 PHC physicians in MOH and 69 in military sector eligible for study inclusion.

Study population and sampling:

Because of limited number in PHC physicians working within boundaries of Tabuk city, all of them were invited to participate in this study including GPs and Family physicians. Because of limited time for data collection as well as because of easy reach ability, only centers within Tabuk city were chosen.

Inclusion criteria:

- Physicians affiliated to a primary care center within the study area since at least 3 months. (Because all new PHC physicians were under supervision during this period i. e by law they are not allowed to work alone)
- On duty during data collection period.

Exclusion criteria:

- Physicians affiliated to a primary care center within the study area less than 3 months.
- Not on duty during data collection period.
- Physicians who refuse to participate in the study.

Study period:

Preparatory period (4-8 weeks)

- Selecting the title and doing the literatures review
- Taking the permission
- Preparing the questionnaire
- Pilot study

Field work (6-8 weeks)

- Data collection
- Data entry and analysis Writing the report (4-6 weeks)

Data collection tool: Appendix (1)

Validated questionnaire was used in this study. [21] Permission to use it was requested though an e-mail communication with the corresponding author. It addresses the following items:

- **Knowledge of physicians:** The percentage of correct answers was computed.
- **Attitude:** was measured on likert scale regarding their intention to learn about common dermatological problems.
- Practice was measured by if they practice or not.

In addition, background information including age, gender, nationality, and place obtaining medical education as well as physician`s practice characteristics including specialty, type and year of practice, and frequency of communicating with the patients were collected

Data collection technique:

The researcher distributed the self-administered questionnaire to the target population by direct contact with them. Care was taken to not disturb the healthcare workers duty. The researcher was available to clarify any issue and the questionnaires were collected soon after encounter. The data were verified by hand then were coded and entered to a personal computer.

Thanks and appreciations were used to encourage the participants to be involved in the study.

Pilot study

It was conducted over one of the PHC centers over 2 weeks on 10 physicians. It helped in adaptation of the study. The results were included in the main report since they were not significant difference from final results.

Data Analysis:

Data were entered and analyzed by SPSS version 22. Descriptive statistics were applied using frequency and percentage since all data were categorized. Analytical statistics were applied using chi-square test for testing the difference and/or association between two categorical variables. Significance was determined at p value < 0.05.

Physician`s` knowledge regarding common skin disorders was categorized according to the mean knowledge score into four categories; insufficient (mean score <60%) and sufficient (mean score ≥60%).

Administrative consideration:

The researcher fulfilled all the required official approvals prior to study conduction.

Ethical considerations:

- A permission letter from the local Directorate of Health for Primary Health Care, MOH, Tabuk was obtained before starting this research.
- An approval from Director of PHC at military hospitals was obtained.
- The participants were assured that the outcome would not be used for performance appraisal of the individuals.
- To maintain the confidentiality from the health authority, the physicians sent the completed questionnaires directly to the principal investigators, and the first page of the questionnaire did not contain the name of the physician.

Budget:

This study was carried out at the full expense of the researcher.

Results

Response rate:

Out of 179 primary healthcare physicians invited to participate in the present study, 10 were excluded from the analysis because they joined their PHC for duration of three months or less and 6 were not on duty during data collection. Thus, 163 were eligible and 132 responded giving a response rate of 81%.

Demographic characteristics:

The study included 132 primary health care physicians. Approaching half of them (47%) aged < 30 years whereas 45.5% aged between 31 and 40 years. They were equally distributed between males and females.

Almost two-thirds of them (68.9%) were non-Saudi. More than half of the participants (54.5%) had MBBS degree of qualification whereas 28% had board degree. More than half of them (54.5%) were general practitioners while only 6.8% were family medicine consultants.

Variables	Categories	Number	Percentage
Age in years	<30	62	47.0
	31-40	60	45.5
	>40	10	7.5
Gender	Male	66	50.0
	Female	66	50.0
Nationality	Saudi	41	31.1
	Non-Saudi	91	68.9
Last qualification	MBBS	72	54.5
	Diploma	8	6.1
	Master	15	11.4
	Board	37	28.0
Profession	General practitioner FM	72	54.5
	resident/registrar	51	38.7
	FM consultant	9	6.8

FM: Family medicine

Table 1: Personal characteristics of the primary health care physicians in Tabuk city (n=132).

Dermatologic practice-related characteristics:

Table 2 illustrates that more than half of the primary health care physicians (54.5%) claimed that they managing 15 patients or less per day. Almost two-thirds of them (68.9%) reported that they had no educational activities in Dermatology at PHCC. Additionally, 65.9% reported that there were no registers on Dermatology in PHCC and 76.5% cited that haven`t guidelines for management of dermatological disorders. Most of the physicians (70.5%) responded that they managed 10 patients or less with dermatological disorders monthly whereas 23.5% managed between 11 and 20 patients monthly.

Regarding health services that are provided to dermatological patients in PHCCs, prescribing drugs (52.3%) and referring (28%) were the most common reported services while hygiene or dietary counseling were reported by 15.9% and 3.8% of the respondents, respectively. Screening was reported by only 12.1% of them. Figure 1

Almost two-thirds of the PHC providers (67.4%) were incompetent to manage patients with skin disorders whereas only 3% were very competent (Figure 2). Among those who were incompetent, lack of knowledge was reported by majority of them (92.1%) of them whereas lack of skills was reported by 10.1% of them as illustrated in figure 3.

Only fifteen PHC physicians (11.4%) reported attendance to any training courses in dermatology at their PHCCs as shown in figure 4. These courses were mostly in the form of lectures (66.7%), followed by symposium (33.3%) or workshop (13.3%) as demonstrated in figure 5.

Variables	Categories	Number	Percentage
Number of patients managed per day	<15	72	54.5
	15-25	35	26.5
	>25	25	19.0
Educational activities in Dermatology at PHCC	Yes	41	31.1
	No	91	68.9
Data or registers on dermatology in PHCC	Yes	45	34.1
	No	87	65.9
Do you have guidelines for management of dermatological disorders in your center	Yes	31	23.5
	No	101	76.5
Number of patients with dermatological disorders managed monthly	≤10	93	70.5
	11-20	31	23.5
	>20	8	6.0

Table 2: Dermatologic practice-related characteristics of the primary health care physicians in Tabuk city (n=132).

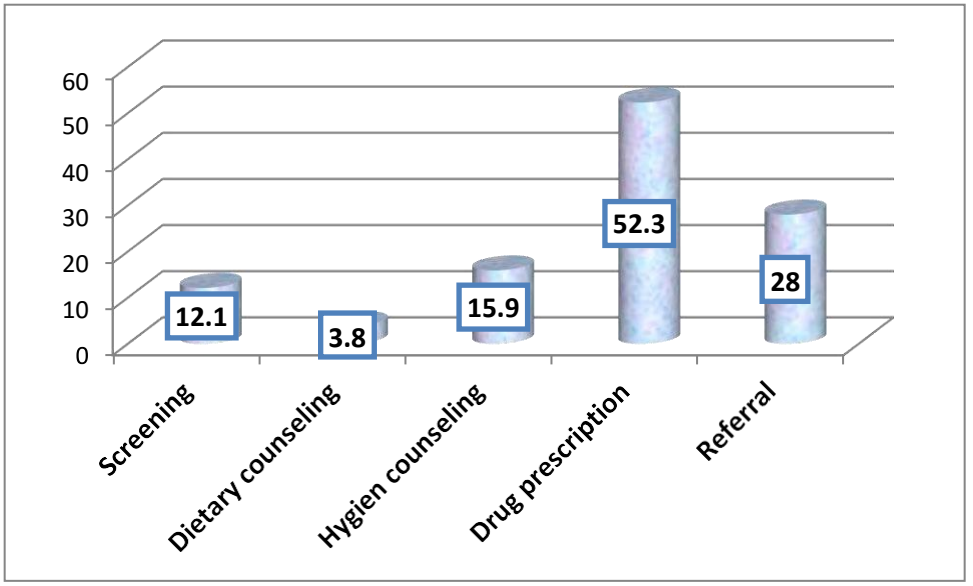

Figure 1: Health services that are provided to dermatological patients in PHCCs.

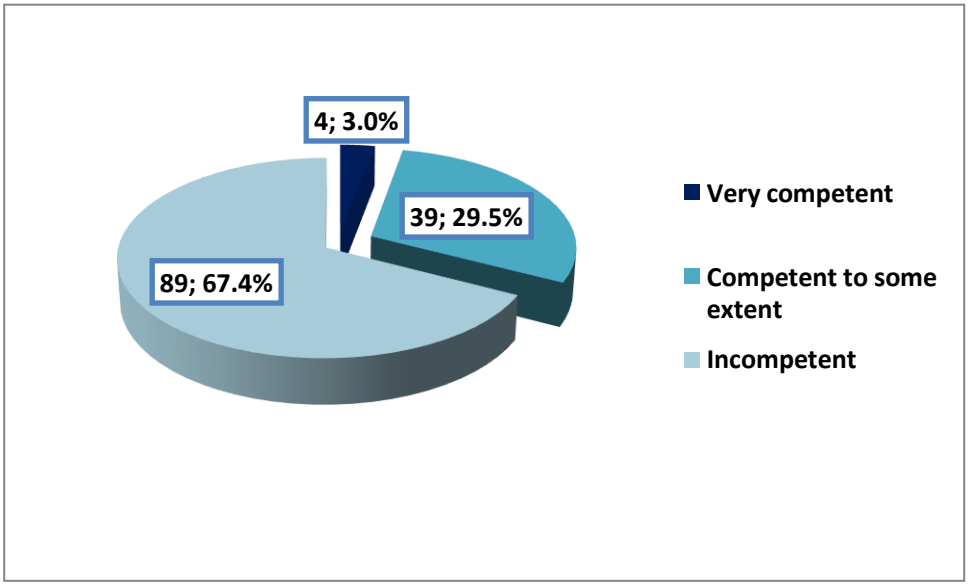

Figure 2: Competence of PHC physicians to manage patient with skin disorders.

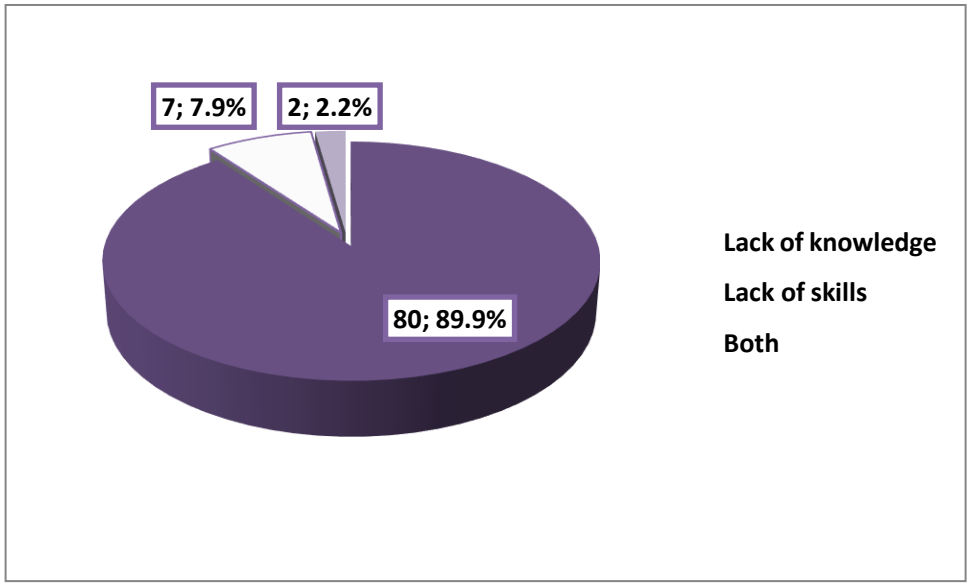

Figure 3: Reasons for PHC physicians for being incompetent in managing patients with dermatological disorders.

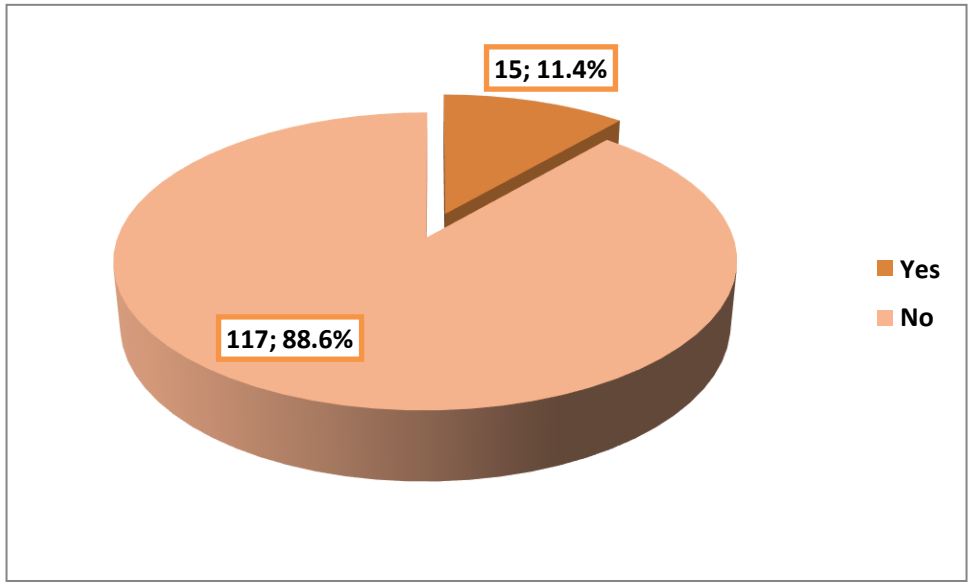

Figure 4: History of attending any training course on dermatology among PHC physicians in Tabuk city.

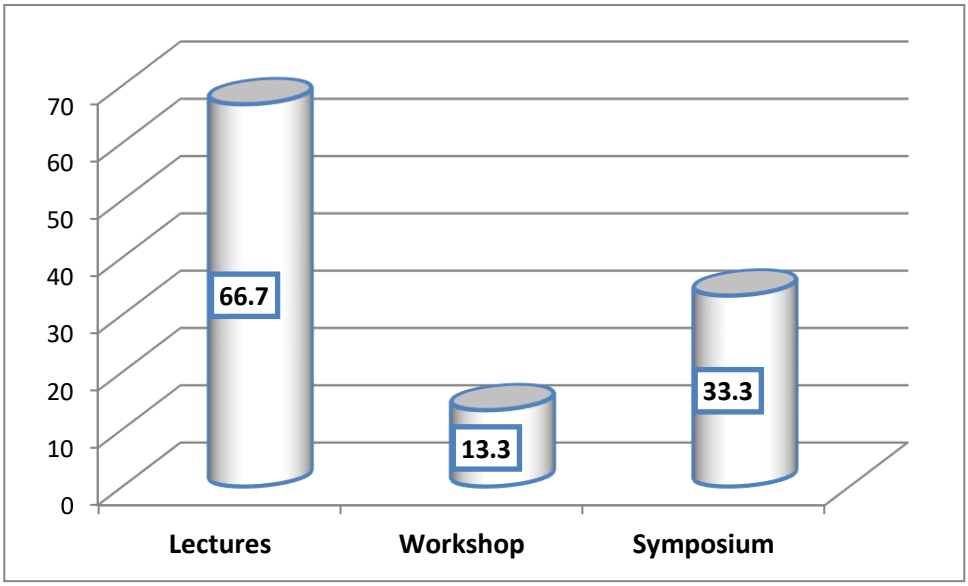

Figure 5: Type of training course in dermatology reported by PHC physicians in Tabuk city (n=15)

Knowledge about common dermatological problems:

Table 3 summarizes responses of the physicians to statements about common dermatological disorders. The highest percentage of correct responses were regarding statements of Scabies is characterized by night itches (68.9%), Behchet' disease is one of the cause in oral ulcerations (63.6%), and Behchet' disease may cause genital ulcerations (62.1%). On the other hand, the lowest percentage of correct responses were regarding statements of anti-histaminic drugs don`t affect all itch similar symptoms (27.3%), topical steroids don`t provide a speedy recovery in the folliculitis (30.3%), angioedema in urticaria disease requires the emergent evaluation of the patient (33.3%) and powerful topical steroids should not be used for face and inguinal region because of the insufficient effect (33.3%)

As obvious from figure 6, overall, majority of primary healthcare physicians (85.6%) had insufficient knowledge regarding common dermatological disorders whereas only 14.4% of them had sufficient knowledge.

Knowledge statements	Correct answers	
	No.	%
All of the skin disorders are constituted to internal organs witch cause disorder. (False)	57	43.2
Acnes are at close relationship range with German diet. (False)	59	44.7
Anti-histaminic drugs do affect all itch similar symptoms. (False)	36	27.3
Steroids may have side effects with local using. (True)	66	50.0
Psoriasis may infect others with direct contact at approximately %20 rate. (False)	60	45.5
Topical steroids provide a speedy recover in the folliculitis. (False)	40	30.3
Angioedema in urticaria disease requires the emergent evaluation of the patient. (True)	44	33.3
The factor of vitiligo's disease is strep. viridans. (False)	62	47.0
Scabies is characterized by night itches. (True)	91	68.9
Urticaria constitutes as a reason of drug, infection or foods. (True)	69	52.3
Systemic steroids provide a speedy recover in the psoriasis. (False)	48	36.4
The river disorders are the most frequent cause acne. (False)	45	34.1
Powerful topical steroids should be used for face and inguinal region because of the insufficient effect. (False)	44	33.3
Behchet' disease may cause genital ulcerations. (True)	82	62.1
U.V. are accused on the etiology of skin cancer . (True)	75	56.8
To moisture the feet is as important as using drugs for prevention of tinea pedis. (False)	52	39.4
Fungal diseases of the foot are always itchy. (False)	66	50.0
Decubitus ulcerations for patients are given to at least one of the two times positional change. (True)	55	41.7
Air-circulated bed use are proposed for decubitus ulceration's patients. (True	59	44.7
Behchet' disease is one of the cause in oral ulcerations. (True)	84	63.6
The blood glucose following is a must to make because systemic steroids decrease blood glucose. (False)	60	45.5
The most frequent cause of male-type hair loss is vitamin insufficiency . (False)	70	53.0
Applying heat to the acute inflammatory region facilitates the recovery. (False)	61	46.2
Blisters and scar tissue points out severe burn for burn patients (True	68	51.5

Table 3: Knowledge of primary health care physicians in Tabuk city about common dermatological disorders (n=132).

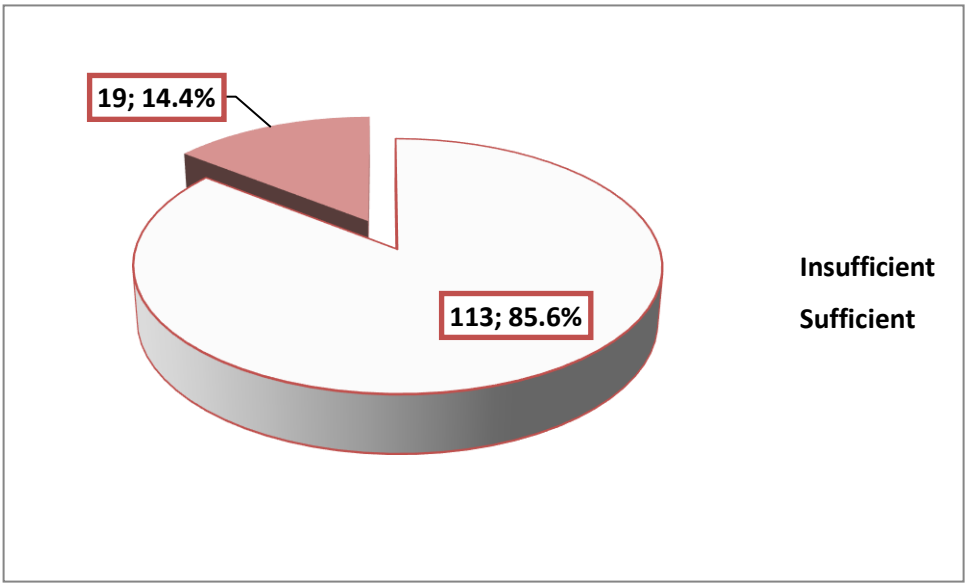

Figure 6: Knowledge level of health care physicians in Tabuk city regarding common dermatological problems.

Table 4 shows that older physicians (>40 years) showed significant higher sufficient level of knowledge regarding common dermatological problems compared to younger physicians (<30 and 31-40 years) (50% versus 16.1% and 6.7%. respectively). This difference was statistically significant, p=0.001. Other demographic factors (gender, nationality, last qualification and profession) were not significantly associated with level of knowledge regarding common dermatological problems.

As illustrated from table 5, one-third (33.3%) of physicians who attended training courses in dermatology compared to 12% among those who did not attend training courses had sufficient knowledge regarding management of common dermatological disorders. The difference was statistically significant, p=0.026.

	Knowledge of common dermatological problems		**Chi-square value**
	Insufficient N=113 N (%)	**Sufficient N=19 N (%)**	**(P-value)**
Age (years)			
<30 (n=62)	52 (83.9)	10 (16.1)	
31-40 (n=60)	56 (93.3)	4 (6.7)	**13.35**
>40 (n=10)	5 (50.0)	5 (50.0)	**(0.001)**
Gender			
Male (n=66)	56 (84.8)	10 (15.2)	**0.06**
Female (n=66)	57 (86.4)	9 (13.6)	**(0.804)**
Nationality			
Saudi (n=41)	32 (78.0)	9 (22.0)	**2.76**
Non-Saudi (n=91)	81 (89.0)	10 (11.0)	**(0.097)**
Education			
MBBS (n=72)	61 (84.7)	11 (15.3)	
Diploma (n=8)	8 (100)	0 (0.0)	
Master (n=15)	13 (86.7)	2 (13.3)	**1.50**
Board (n=37)	31 (83.8)	6 (16.2)	**(0.681)**
Profession			
GP (n=72)	62 (86.1)	10 (13.9)	
FM resident (n=51)	43 (84.3)	8 (15.7)	**0.16**
FM consultant (n=9)	8 (88.9)	1 (11.1)	**(0.922)**

Table 4: Association between physicians` personal characteristics and their knowledge about common dermatological problems

	Categories	Knowledge of common dermatological problems		Chi-square value (P-value)
		Insufficient N=113 N (%)	Sufficient N=19 N (%)	
Training course in dermatology	No (117)	103 (88.0)	14 (12.0)	**4.93 (0.026)**
	Yes (15)	10 (66.7)	5 (33.3)	

Table 5: Association between physicians` attendance of training courses in dermatology and their knowledge about common dermatological disorders

Practice in the management of common dermatological problems

-Confidentiality in management skin disorders

From table 6, it is evident that majority of primary healthcare providers were very confident in managing acne (82.6%) and eczema (78.1%) whereas only 39.4%, 17.4% and 14.4% were very confident in managing fungal diseases, angio-oedema and rosacea, respectively. Minority of them were very confident in managing skin cancer (6.1%), infestations (4.5%), warts (3.8%) and psoriasis (3%).

As shown in table 7, physicians who were confident in managing psoriasis were more knowledgeable about the management of common dermatological problems than those who reported that they need to learn (25.6% versus 9%). This difference was statistically significant, p=0.011. Similarly, physicians who were confident in managing infestations were more knowledgeable about the management of common dermatological problems than those who reported that they need to learn (28.8% versus 5%). This difference was statistically significant, p<0.001.

Physician`s confidentiality in managing other common dermatological disorders was not significantly associated with their knowledge about these diseases.

	Very confident N (%)	Quit confident N (%)	Need to learn a bit N (%)	Need to learn a lot N (%)
Acne	109 (82.6)	16 (12.1)	5 (3.8)	2 (1.5)
Eczema	103 (78.1)	18 (13.6)	9 (6.8)	2 (1.5)
Psoriasis	4 (3.0)	39 (29.5)	67 (50.8)	22 (16.7)
Warts	5 (3.8)	49 (37.1)	54 (40.9)	24 (18.2)
Infestations	6 (4.5)	46 (34.8)	51 (38.6)	29 (22.1)
Fungal diseases	52 (39.4)	40 (30.3)	22 (16.7)	18 (13.6)
Leg ulcers	18 (13.6)	56 (42.4)	38 (28.8)	20 (15.2)
Skin cancer	8 (6.1)	35 (26.5)	53 (40.1)	36 (27.3)
Angio-oedema	23 (17.4)	38 (28.8)	47 (35.6)	24 (18.2)
Rosacea	19 (14.4)	30 (22.7)	47 (35.6)	36 (27.3)

Table 6: Confidentiality of primary healthcare physicians to manage common dermatological disorders

		Knowledge of common dermatological problems		(p-value)
		Insufficient N=113 N (%)	Sufficient N=19 N (%)	
Acne	Confident (125) Need to learn (7)	107 (85.6) 6 (85.7)	18 (14.4) 1 (14.3)	**(0.735)***
Eczema	Confident (121) Need to learn (11)	105 (86.8) 8 (72.7)	16 (13.2) 3 (27.3)	**(0.196)***
Psoriasis	Confident (43) Need to learn (89)	32 (74.4) 81 (91.0)	11 (25.6) 8 (9.0)	**(0.011)****
Warts	Confident (54) Need to learn (78)	44 (81.5) 69 (88.5)	10 (18.5) 9 (11.5)	**(0.261)****
Infestations	Confident (52)	37 (71.2)	15 (28.8)	

	Need to learn (80)	76 (95.0)	4 (5.0)	**(<0.011)***
Fungal diseases	Confident (92) Need to learn (40)	78 (84.8) 35 (87.5)	14 (15.2) 5 (12.5)	**(0.683)****
Leg ulcers	Confident (74) Need to learn (58)	61 (82.4) 52 (89.7)	13 (17.6) 6 (10.3)	**(0.241)**
Skin cancer	Confident (43) Need to learn (89)	39 (90.7) 74 (83.1)	4 (9.3) 15 (16.9)	**(0.247)***
Angio-oedema	Confident (61) Need to learn (71)	51 (83.6) 62 (87.3)	10 (16.4) 9 (12.7)	**(0.544)****
Rosacea	Confident (49) Need to learn (83)	44 (89.8) 69 (83.1)	5 (10.2) 14 (16.9)	**(0.292)****

**Fischer exact test* ** *Chi-square test*

Table 7: Association between physicians` confidentiality in managing common dermatological disorders and their knowledge about them

-Practice regarding common dermatological disorders

Table 8 presents the practice of primary healthcare providers in Tabuk city in the management of common dermatological problems. More than two-thirds of them reported that they treat patients with acne (72.7%) and advice the patient with acne about diet (69.7%). Almost two-thirds of them (65.9%) treat patients with dermatitis. Nearly half of them reported that they look at the feet of the person who has rash on the groin (52.3%) and advice patients with dermatitis about diet (51.5%). Half of them look at the feet of the person who has rash on the hand while less than half of them (44.7%) cited that they think that stress is the most important factor for in the aetiology of dermatitis, psoriasis and acne and 43.2% of them took scraping for fungal culture. Approaching one-third of the physicians (34.8%) straight away refer someone with rash to dermatologist. Only 25.8% and 22% of them reported that they know how much cream is needed to cover the body, and take punch biopsy, respectively.

Questions	Yes N (%)	No N (%)
Treat the patient with dermatitis?	**87 (65.9)**	**45 (34.1)**
Treat the patient with acne?	**96 (72.7)**	**36 (37.3)**
Advice the patient with acne about diet?	**92 (69.7)**	**40 (30.3)**
Advice the patient with dermatitis about diet?	**68 (51.5)**	**64 (48.5)**
Think that stress is the most important factor for inthe aetiology of dermatitis, Psoriasis and acne?	**59 (44.7)**	**73 (55.3)**
Look at the feet of the person who has rash on thegroin?	**69 (52.3)**	**63 (47.7)**
Look at the feet of the person who has rash on thehand?	**66 (50.0)**	**66 (50.0)**
Straight away refer someone with rash to dermatologist?	**46 (34.8)**	**86 (65.2)**
Take scraping for fungal culture?	**57 (43.2)**	**75 (56.8)**
Take punch biopsy?	**29 (22.0)**	**103 (78.0)**
Know how much cream is needed to cover thebody?	**34 (25.8)**	**98 (74.2)**

Table 8: Practice of primary healthcare providers in Tabuk city regarding management of common dermatological problems.

Table 9 shows that 19.5% of physicians who treat patients with dermatitis had sufficient knowledge regarding common dermatological problems compared to 4.4% of those who did not treat patients with dermatitis; this difference was statistically significant, p=0.014. Similarly, 17.7% of physicians who treat patients with acne had sufficient knowledge regarding common dermatological problems compared to 5.6% of those who did not treat patients with dermatitis; however, this difference did not reach statistically significant level, p=0.061.

Other practices were not significantly associated with knowledge regarding common dermatological disorders.

		Knowledge of common dermatological problems		(P-value)
		Insufficient N=113 N (%)	**Sufficient N=19 N (%)**	
Treat the patient with dermatitis?	Yes No	70 (80.5) 43 (95.6)	17 (19.5) 2 (4.4)	**(0.014)***
Treat the patient with acne?	Yes No	79 (82.3) 34 (94.4)	17 (17.7) 2 (5.6)	**(0.061)***
Advice the patient with acne about diet?	Yes No	80 (87.0) 33 (82.5)	12 (13.0) 7 (17.5)	**(0.503)****
Advice the patient with dermatitis about diet?	Yes No	58 (85.3) 55 (85.9)	10 (14.7) 9 (14.1)	**(0.916)****
Think that stress is the most important factor for in the aetiology of dermatitis, Psoriasis and acne?	Yes No	49 (83.1) 64 (87.7)	10 (16.9) 9 (12.3)	**(0.452)****
Look at the feet of the person who has rash on the groin?	Yes No	61 (88.4) 52 (82.5)	8 (11.6) 11 (17.5)	**(0.338)****
Look at the feet of the person who has rash on the hand?	Yes No	58 (87.9) 55 (83.3)	8 (12.1) 11 (16.7)	**(0.457)****
Straight away refer someone with rash to dermatologist?	Yes No	42 (91.3) 71 (82.6)	4 (8.7) 15 (17.4)	**(0.134)***
Take scraping for fungal culture?	Yes No	49 (86.0) 64 (85.3)	8 (14.0) 11 (14.7)	**(0.918)****
Take punch biopsy?	Yes No	24 (82.8) 89 (86.4)	5 (17.2) 14 (13.6)	**(0.621)****
Know how much cream is needed to cover the body?	Yes No	30 (88.2) 83 (84.7)	4 (11.8) 15 (15.3)	**(0.425)***

**Fischer exact test* ** *Chi-square test*

Table 9: Association between physicians` practice in dermatology and their knowledge about common dermatological problems

-Association between socio-demographic characteristic of physicians and practice in dermatology

-Gender: As demonstrated in table 10, there was no statistically significant difference between male and female physicians regarding different studied practices in dermatology.

		Physician`s gender		(P-value)*
		Male N=66 N (%)	**Female N=66 N (%)**	
Treat the patient with dermatitis?	Yes No	45 (68.2) 21 (31.8)	42 (63.6) 24 (36.4)	**(0.582)**
Treat the patient with acne?	Yes No	48 (72.7) 18 (27.3)	48 (72.7) 18 (27.3)	**NA**
Advice the patient with acne about diet?	Yes No	49 (74.2) 17 (25.8)	43 (65.2) 23 (34.8)	**(0.256)**
Advice the patient with dermatitis about diet?	Yes No	37 (56.1) 29 (43.9)	31 (47.0) 35 (53.0)	**(0.296)**
Think that stress is the most important factor for in the aetiology of dermatitis, Psoriasis and acne?	Yes No	34 (51.5) 32 (48.5)	25 (37.9) 41 (62.1)	**(0.115)**
Look at the feet of the person who has rash on the groin?	Yes No	37 (56.1) 29 (43.9)	32 (48.5) 34 (51.5)	**(0.384)**
Look at the feet of the person who has rash on the hand?	Yes No	34 (51.5) 32 (48.5)	32 (48.5) 34 (51.5)	**(0.728)**
Straight away refer someone with rash to dermatologist?	Yes No	22 (33.3) 44 (66.7)	24 (36.4) 42 (63.6)	**(0.715)**
Take scraping for fungal culture?	Yes No	27 (40.9) 39 (59.1)	30 (45.5) 36 (54.5)	**(0.598)**
Take punch biopsy?	Yes No	14 (21.2) 52 (78.8)	15 (22.7) 51 (77.3)	**(0.833)**
Know how much cream is needed to cover the body?	Yes No	17 (25.8) 49 (74.2)	17 (25.8) 49 (74.2)	**NA**

Table 10: Association between physicians` gender and practice in dermatology

-Age: Two-thirds of Diploma/Master holder physicians compared to 37.1% of MBBS holders reported looking at the feet of the person who has rash on the groin, p=0.004. Physician`s age was not significantly associated with other studied practices in dermatology. Table 11

		Physician`s age (years)			(P-value)*
		<30 N=62 N (%)	31-40 N=60 N (%)	>40 N=10 N (%)	
Treat the patient with dermatitis?	Yes No	41 (66.1) 21 (33.9)	38 (63.3) 22 (36.7)	8 (80.0) 2 (20.0)	**(0.588)**
Treat the patient with acne?	Yes No	45 (72.6) 17 (27.4)	42 (70.0) 18 (30.0)	9 (90.0) 1 (10.0)	**(0.421)**
Advice the patient with acne about diet?	Yes No	44 (71.0) 18 (29.0)	44 (73.3) 16 (26.7)	4 (40.0) 6 (60.0)	**(0.100)**
Advice the patient with dermatitis about diet?	Yes No	30 (48.4) 32 (51.6)	31 (51.7) 29 (48.3)	7 (70.0) 3 (30.0)	**(0.447)**
Think that stress is the most important factor for in the aetiology of dermatitis, Psoriasis and acne?	Yes No	25 (40.3) 37 (59.7)	29 (48.3) 31 (51.7)	5 (50.0) 5 (50.0)	**(0.633)**
Look at the feet of the person who has rash on the groin?	Yes No	23 (37.1) 39 (62.9)	40 (66.7) 20 (33.3)	6 (60.0) 4 (40.0)	**(0.004)**
Look at the feet of the person who has rash on the hand?	Yes No	29 (46.8) 33 (53.2)	31 (51.7) 29 (48.3)	6 (60.0) 4 (40.0)	**(0.696)**
Straight away refer someone with rash to dermatologist?	Yes No	17 (27.4) 45 (72.6)	27 (45.0) 33 (55.0)	2 (20.0) 8 (80.0)	**(0.074)**
Take scraping for fungal culture?	Yes No	24 (38.7) 38 (61.3)	28 (46.7) 32 (53.3)	5 (50.0) 5 (50.0)	**(0.609)**
Take punch biopsy?	Yes No	11 (17.7) 51 (82.3)	15 (25.0) 45 (75.0)	3 (30.0) 7 (70.0)	**(0.511)**
Know how much cream is needed to cover the body?	Yes No	14 (22.6) 48 (77.4)	17 (28.3) 43 (71.7)	3 (30.0) 7 (70.0)	**(0.730)**

**Chi-square test NA: Not applicable*

Table 11: Association between physicians` age and practice in dermatology

-Nationality: As shown in table 12, Most of Saudi physicians (80.5%) compared to 59.3% of non-Saudi physicians reported treatment of patients with dermatitis. This difference was statistically significant, p=0.018. There was no statistically significant difference between Saudi and non-Saudi physicians regarding other studied practices in dermatology.

		Physician`s nationality		(P-value)*
		Non-Saudi N=91 N (%)	Saudi N=41 N (%)	
Treat the patient with dermatitis?	Yes No	54 (59.3) 37 (40.7)	33 (80.5) 8 (19.5)	**(0.018)**
Treat the patient with acne?	Yes No	63 (69.2) 28 (30.8)	33 (80.5) 8 (19.5)	**(0.179)**
Advice the patient with acne about diet?	Yes No	65 (71.4) 26 (28.6)	27 (65.9) 14 (34.1)	**(0.519)**
Advice the patient with dermatitis about diet?	Yes No	46 (50.5) 45 (49.5)	22 (53.7) 19 (46.3)	**(0.741)**
Think that stress is the most important factor for in the aetiology of dermatitis, Psoriasis and acne?	Yes No	38 (41.8) 53 (58.2)	21 (51.2) 20 (48.8)	**(0.312)**
Look at the feet of the person who has rash on the groin?	Yes No	44 (48.4) 47 (51.6)	25 (61.0) 16 (39.0)	**(0.179)**
Look at the feet of the person who has rash on the hand?	Yes No	44 (48.4) 47 (51.6)	22 (53.7) 19 (46.3)	**(0.573)**
Straight away refer someone with rash to dermatologist?	Yes No	36 (39.6) 55 (60.4)	10 (24.4) 31 (75.6)	**(0.091)**
Take scraping for fungal culture?	Yes No	42 (46.2) 49 (53.8)	15 (36.6) 26 (63.4)	**(0.304)**
Take punch biopsy?	Yes No	21 (23.1) 70 (76.9)	8 (19.5) 33 (80.5)	**(0.647)**
Know how much cream is needed to cover the body?	Yes No	22 (24.2) 69 (75.8)	12 (29.3) 29 (70.7)	**(0.536)**

**Chi-square test NA: Not applicable*

Table 12: Association between physicians` nationality and practice in dermatology

-Qualification: Majority of physicians holding Board degree (86.5%) compared to 62.5% of those holding MBBS reported giving advices to patients with acne about diet. The difference was statistically significant, p=0.031. Most of Diploma/Master holder physicians (73.9%) compared to 40.3% of MBBS holders reported looking at the feet of the person who has rash on the groin, p=0.007. Physician`s qualification was not significantly associated with other studied practices in dermatology. Table 13

		Physician`s qualification			**(P-value)***
		MBBS N=72 N (%)	**Diploma/ master N=23 N (%)**	**Board N=37 N (%)**	
Treat the patient with dermatitis?	Yes No	47 (65.3) 25 (34.7)	18 (78.3) 5 (21.7)	22 (59.5) 15 (40.5)	**(0.323)**
Treat the patient with acne?	Yes No	48 (66.7) 24 (33.3)	18 (78.3) 5 (21.7)	30 (81.1) 7 (18.9)	**(0.224)**
Advice the patient with acne about diet?	Yes No	45 (62.5) 27 (37.5)	15 (65.2) 8 (34.8)	32 (86.5) 5 (13.5)	**(0.031)**
Advice the patient with dermatitis about diet?	Yes No	35 (48.6) 37 (51.4)	16 (69.6) 7 (30.4)	17 (45.9) 20 (54.1)	**(0.157)**
Think that stress is the most important factor for in the aetiology of dermatitis, Psoriasis and acne?	Yes No	32 (44.4) 40 (55.6)	9 (39.1) 14 (60.9)	18 (48.6) 19 (51.4)	**(0.770)**
Look at the feet of the person who has rash on the groin?	Yes No	29 (40.3) 43 (59.7)	17 (73.9) 6 (26.1)	23 (62.2) 14 (37.8)	**(0.007)**
Look at the feet of the person who has rash on the hand?	Yes No	37 (51.4) 35 (48.6)	11 (47.8) 12 (52.2)	18 (48.6) 19 (51.4)	**(0.939)**
Straight away refer someone with rash to dermatologist?	Yes No	28 (38.9) 44 (61.1)	7 (30.4) 16 (69.6)	11 (29.7) 26 (70.3)	**(0.565)**
Take scraping for fungal culture?	Yes No	34 (47.2) 38 (52.8)	7 (30.4) 16 (69.6)	16 (43.2) 21 (56.8)	**(0.367)**
Take punch biopsy?	Yes No	15 (20.8) 57 (79.2)	4 (17.4) 19 (82.6)	10 (27.0) 27 (73.0)	**(0.642)**
Know how much cream is needed to cover the body?	Yes No	17 (23.6) 55 (76.4)	8 (34.8) 15 (65.2)	9 (24.3) 28 (75.7)	**(0.551)**

Table 13: Association between physicians` gender and practice in dermatology

-Profession: None of the studied practices in dermatology was significantly associated with physician`s profession as seen in table 14

		Physician`s qualification			(P-value)*
		GP N=72 N (%)	**FM resident/ registrar N=51 N (%)**	**FM consultant N=9 N (%)**	
Treat the patient with dermatitis?	Yes No	49 (68.1) 23 (31.9)	32 (62.7) 19 (37.3)	6 (66.7) 3 (33.3)	**(0.828)**
Treat the patient with acne?	Yes No	51 (70.8) 21 (29.2)	40 (78.4) 11 (21.6)	5 (55.6) 4 (44.4)	**(0.316)**
Advice the patient with acne about diet?	Yes No	46 (63.9) 26 (36.1)	37 (72.5) 14 (27.5)	9 (100) 0 (0.0)	**(0.072)**
Advice the patient with dermatitis about diet?	Yes No	36 (50.0) 36 (50.0)	26 (51.0) 25 (49.0)	6 (66.7) 3 (33.3)	**(0.638)**
Think that stress is the most important factor for in the aetiology of dermatitis, Psoriasis and acne?	Yes No	28 (38.9) 44 (61.1)	26 (51.0) 25 (49.0)	5 (55.6) 4 (44.4)	**(0.328)**
Look at the feet of the person who has rash on the groin?	Yes No	32 (44.4) 40 (55.6)	30 (58.8) 21 (41.2)	7 (77.8) 2 (22.2)	**(0.082)**
Look at the feet of the person who has rash on the hand?	Yes No	35 (48.6) 37 (51.4)	28 (54.9) 23 (45.1)	3 (33.3) 6 (66.7)	**(0.462)**
Straight away refer someone with rash to dermatologist?	Yes No	25 (34.7) 47 (65.3)	17 (33.3) 3 (66.7)	4 (44.4) 5 (55.6)	**(0.812)**
Take scraping for fungal culture?	Yes No	32 (44.4) 40 (55.6)	22 (43.1) 29 (56.9)	3 (33.3) 6 (66.7)	**(0.818)**
Take punch biopsy?	Yes No	14 (19.4) 58 (80.6)	11 (21.6) 40 (78.4)	4 (44.4) 5 (55.6)	**(0.232)**
Know how much cream is needed to cover the body?	Yes No	17 (23.6) 55 (76.4)	12 (23.5) 39 (76.5)	5 (55.6) 4 (44.6)	**(0.106)**

**Chi-square test NA: Not applicable GP: general practitioner FM: Family medicine*

Table 14: Association between physicians` profession and practice in dermatology

-Attending training course

It is evident from table 15 that physicians who attended any training course in dermatology were more likely than those who did not attend such courses to treat patients with dermatitis (93.3% versus 62.4%, p=0.013), treat patients with acne (100% versus 69.2%, p=0.006), advice the patient with dermatitis about diet (68.7% versus 47%, p=0.003), and look at the feet of the person who has rash on the groin (80% versus 48.7%, p=0.020). On the other hand, patients who did not attend any course in dermatology were more likely than those attended such courses to straight away refer someone with rash to dermatologist (38.5% versus 6.7%, p=0.011).

		Attendance of any trainingcourse in dermatology		**(P-value)**
		Yes N=15N (%)	**No N=117N(%)**	
Treat the patient with dermatitis?	Yes No	14 (93.3) 1 (6.7)	73 (62.4) 44 (37.6)	**(0.013)****
Treat the patient with acne?	Yes No	15 (100) 0 (0.0)	81 (69.2) 36 (30.8)	**(0.006)****
Advice the patient with acne about diet?	Yes No	13 (86.7) 2 (13.3)	79 (67.5) 38 (32.2)	**(0.107)****
Advice the patient with dermatitis about diet?	Yes No	13 (86.7) 2 (13.3)	55 (47.0) 62 (53.0)	**(0.003)****
Think that stress is the most important factor for in the aetiology of dermatitis, Psoriasis and acne?	Yes No	9 (60.0) 6 (40.0)	50 (42.7) 67 (57.3)	**(0.205)***
Look at the feet of the person who has rash on the groin?	Yes No	12 (80.0) 3 (20.0)	57 (48.7) 60 (51.3)	**(0.020)**
Look at the feet of the person who has rash on the hand?	Yes No	10 (66.7) 5 (33.3)	56 (47.9) 61 (52.1)	**(0.170)**
Straight away refer someone with rash to dermatologist?	Yes No	1 (6.7) 14 (93.3)	45 (38.5) 72 (61.5)	**(0.011)**
Take scraping for fungal culture?	Yes No	7 (46.7) 8 (53.3)	50 (42.7) 67 (57.3)	**(0.772)**
Take punch biopsy?	Yes No	1 (6.7) 14 (93.3)	28 (23.9) 89 (76.1)	**(0.833)**
Know how much cream is needed to cover the body?	Yes No	3 (20.0) 12 (80.0)	31 (26.5) 86 (73.5)	**(0.426)**

Table 15: Association between attendance of any training course and practice in dermatology among physicians

Experience and barriers of practice regarding management of dermatological disorders

Figure 7 demonstrated that 36.4% of physicians had good experience in managing skin disorders whereas only 5.3% reported excellent experience whereas more than half of them (58.3%) had poor experience in managing skin disorders.

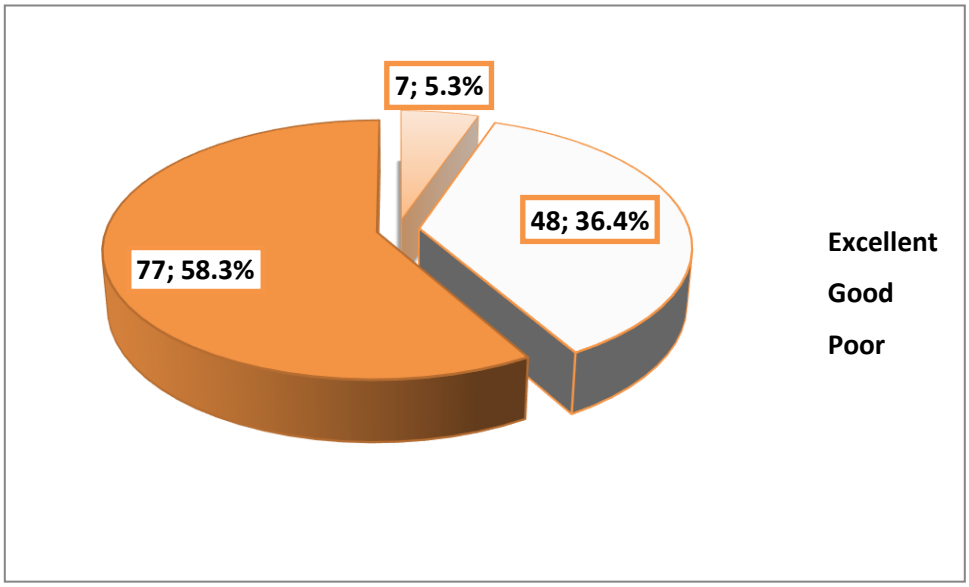

Figure 7: Primary health care physicians`expertization in managing skin disorders

As demonstrated in figure 8, the commonest reported barriers faced by PCH physicians regarding management of dermatological disorders were lack of training (68.2%), followed by lack of clinical guidelines (15.2%)m lack of educational materials (12.1%) and lack of drugs (10.6%).

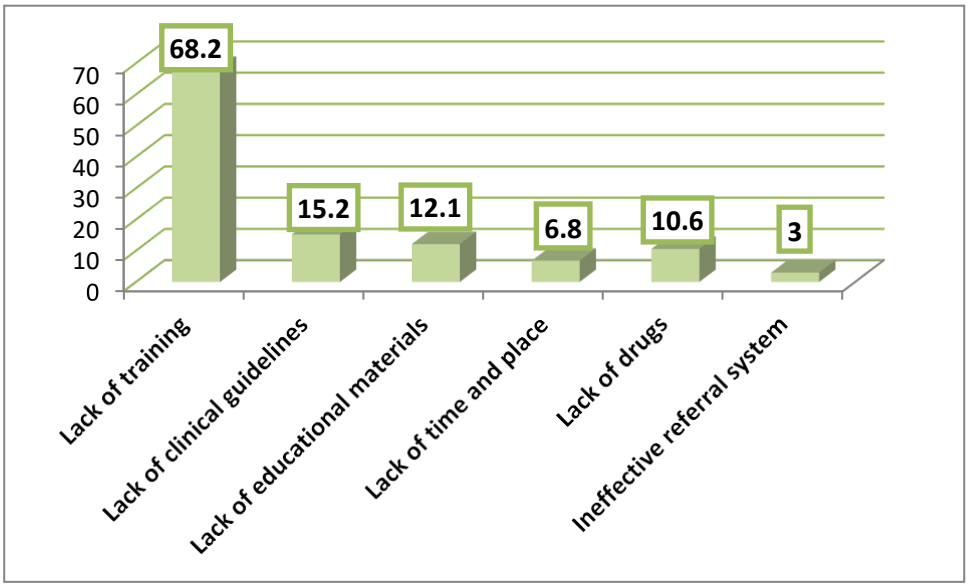

Figure 8: Barriers in management of skin disorders among PHC physicians

Majority of the physicians (98.5%) either strongly agreee or agree that they can play important role in the management of common skin disorders as illustrated in figure 9.

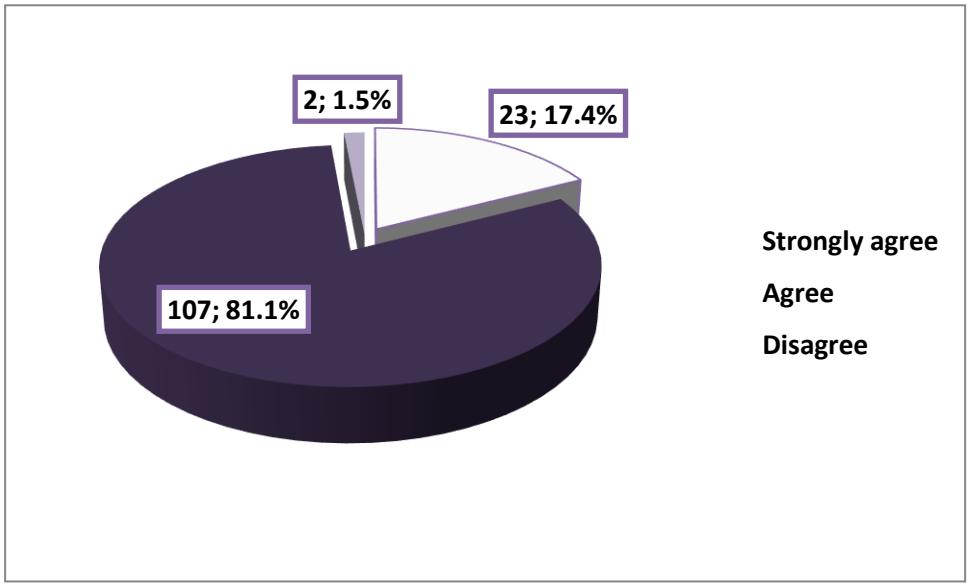

Figure 9: Physicians` opinion regarding the role they can play in the management of common skin disorders.

By asking of the respondents regarding difficulty in management of skin disorders compared to other body disorders, 81.8% of them answered that it is more difficult whereas only one physician (0.8%) answered that it is easier. Figure10

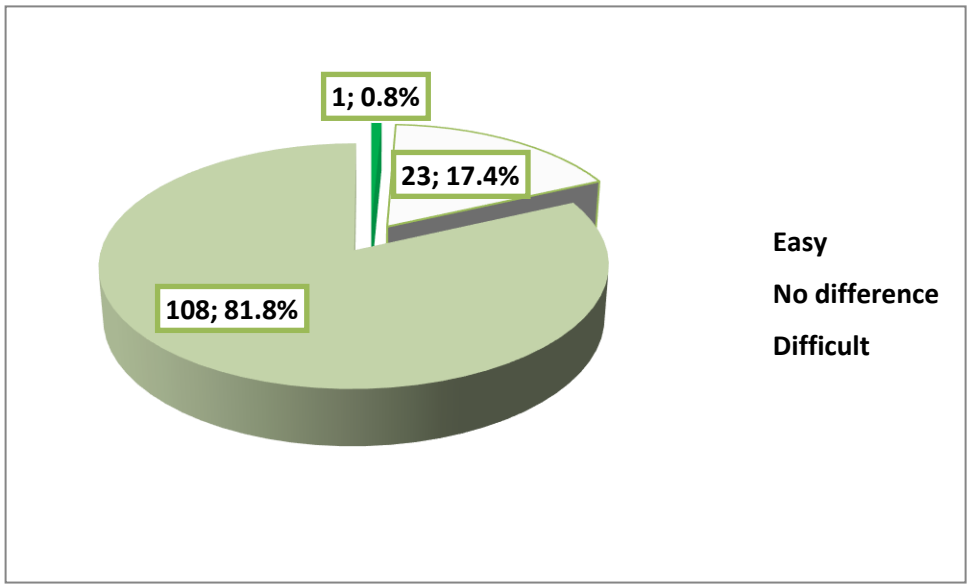

Figure 10: Opinion of PHC providers regarding difficulty in management of skin disorders compared to other body disorders.

Responses of the PHC physicians to a question concerning difficulties faced by them in management of skin disorders are summarized in figure 11. Absence of experience was mentioned by most of them (71.2%). Difficulties to give counselling about general hygiene, difficulties to communicate, difficulties to arrange for referral, and difficulties to give counselling about diet were reported by 15.2%, 8.4%, 4.6% and 3.1% of them, respectively.

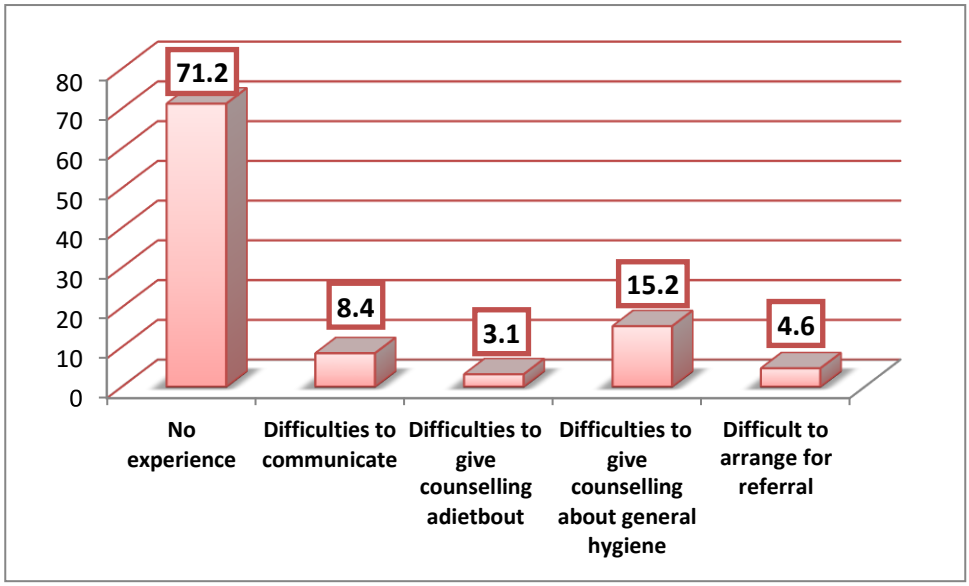

Figure 11: Practical difficulties faced by PHC physicians in management of skin disorders.

Discussion

Primary health care physicians are on the front line of managing dermatologic disorders. PHC physicians must develop meticulous observational skills and use appropriate terminology to diagnose and characterize various skin disorders. [21] Most skin disorders are morphologically distinctive, meaning that with adequate knowledge and clinical expertise, a correct diagnosis can be made in the majority of cases.[21] Fortunately, majority of physicians in the present study believed that they should have a role in the management of common skin disorders.

According to AAFP (2008), [22] a PHC/family physician must have sufficient knowledge of different diagnoses and must know where to access appropriate information using textbook or online resources. Unfortunately, in the present study, majority (85.6%) of primary healthcare physicians had insufficient knowledge regarding common dermatological disorders.

According to results of the current study, the majority of primary healthcare physicians reported that the management of skin disorders is difficult, if compared with other body disorders. The commonest obstacles reported by them were lack of training, clinical guidelines as well as educational materials. In a study conducted by Hansra et al in USA, [23]

PHC physicians reported that dermatology was not as adequately taught as asthma and diabetes in their curriculum. Almost two-thirds of them felt their medical school curriculum inadequately prepared them to diagnose and treat common skin disorders. The same could explain why PHC physicians in our study felt that management of skin disorders is difficult compared to management of other body organs.

According to AAMC (2005),[24] early diagnostic biopsy as well as surgical or medical treatment of dermatological lesions are within the scope of a primary care physician's skills. They must be proficient on a systems level in providing cost-effective, timely and cosmetically perfect skin surgery. In the current study, only 22% of PHC physicians were able to take punch biopsy in their practice and 43.2% took scraping for fungal culture. In addition, 13.6% and 6.1% of them were very confident in the management of leg ulcer and skin cancer, respectively. Furthermore, 44% and 67.4% of them reported that they need to learn more in the management of leg ulcer and skin cancer, respectively. These topics should be prioritized for improvement in dermatology curricula in medical schools. Procedural training is especially important for residents planning to practice in medical and dermatological areas. Quite similar to our findings has been reported by others who reported that there were numerous topics that PHC physicians identified as very important in their practices, but they inadequately taught in their medical school dermatology curricula. These include skin infections, leg ulcers/wound care, cutaneous drug eruptions, infestations, and viral exanthems. [23] PHC physicians not only need to know how to perform the procedures correctly, but also to whom to send the tissue for evaluation and how to interpret biopsy results. [25]

Awadalla, et al [26] reported inability of primary care physicians to diagnose correctly the most common twenty dermatologic disorders; Lichen planus was recognized by 93% of the dermatologists compared to only 16% of the non-dermatologists while Seborrheic dermatitis was correctly diagnosed by 93% of dermatologists and only 29% of non- dermatologists. Additionally atopic dermatitis was recognized correctly by 97% and 32% of dermatologists and non-dermatologists, respectively while pityriasis rosea was correctly diagnosed by 97% of dermatologists and only 44 percent of non-dermatologists. Malignant basal cell carcinoma was correctly recognized by all dermatologists and only 30% of non dermatologists. Similarly, Seborrheic keratosis was correctly diagnosed by all dermatologists and only 33%of the non-dermatologists. However, some authors [27] demonstrated that most skin conditions diagnosed and managed by primary care physicians improved after 7 days of therapy.

Referrals to dermatologists were relatively infrequent. In the present study, 34.8% of primary health care physicians straight away refer someone with rash to dermatologist, mostly they were those not attended any training courses in dermatology.

The training of primary health care physicians in the care of skin disease has been identified as a key element to tackle the problem;[28, 29] however, the few previous trials to do so proved disappointing or were not evaluated in a systematic manner. [29, 30] In Mali, after a single day of training, a marked improvement was seen in the management of skin diseases in primary health care centres, according to changes in defined indicators evaluated in samples of general health care workers.[31]

In the present study, only 11.4% of PHC physicians attended any training courses in dermatology. They were more knowledgeable of common dermatological disorders and more likely to treat some disorders as dermatitis and acne as well as give advices to dermatitis and acne patients regarding diet. However, they did not express difference in performing some dermatological procedures such as taking punch biopsy, take scraping for fungal culture and know how much cream is needed to cover the body. Therefore, quality of such training curses should be re- evaluated.

Porta et al observed that following a training course, an overall diagnostic agreement between PHC physicians and dermatologists of 65.5%.[32] They stressed the importance of training primary care physicians in the field of dermatology, to provide them with the knowledge needed to recognize common skin lesions such as warts and to avoid confusion with benign skin tumors such as soft fibromas and seborrheic keratosis, lesions often incorrectly identified as warts.

This study has significant limitations. First, the study was done in a single city. Therefore, it should be repeated in other cities to test generalizability. Other limitations are the relatively small size of the study population and the limited number of involved skin disorders, some of which are rare. We did not address the basic structure and function of the skin, description of skin lesions, and performing a complete skin examination. We believed these topics were basic areas of knowledge that should always be included in the medical school curriculum.

Conclusion

Common dermatological disorders are relatively frequent in Primary care practice in Tabuk city. Majority of primary health care physicians had insufficient knowledge regarding management of common skin disorders. Younger physicians and those reported lack of training courses were more likely to have insufficient knowledge. Almost two-thirds of PHC physicians were incompetent in managing patients with common skin disorders. Heath service that was commonly provided to dermatological patients in PHCCs was prescribing drugs, followed by referral. Minority of PHC physicians attended training courses in dermatology. Majority of the PHC physicians strongly agreed that they should have a role in the managing of common dermatological disorders. The commonly reported barriers for that are lack of training in dermatology, clinical guidelines and educational materials.

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