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PREVALENCE OF DERMATOLOGIC DISORDERS AND ASSOCIATED FACTORS AMONG ELDERLY POPULATION ATTENDING AT PRIMARY HEALTHCARE CENTERS IN SAUDI ARABIA: A CROSS-SECTIONAL STUDY

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Abstract

Background: Dermatologic disorders among the elderly population pose significant healthcare challenges globally. This study aimed to assess the prevalence of dermatologic disorders and associated factors among elderly individuals attending primary healthcare centers in Saudi Arabia.

Methods: A cross-sectional study was conducted at primary healthcare centers within the National Guard Health Affairs in Jeddah. Data were collected using a web-based questionnaire and interviews. Sociodemographic characteristics, comorbidities, and dermatologic conditions were assessed. Statistical analysis included descriptive statistics and regression models.

Results: A total of 132 elderly participants were included, with a mean age of 68.25 years. The majority were females (62.9%) and married (73.5%). Over one-fifth were smokers (20.5%), and comorbid conditions such as diabetes and hypertension were prevalent. More than one-third (42.4%) suffered from dermatologic disorders, including eczema and skin infections. Most dermatologic conditions were localized to specific body regions, with some influenced by weather conditions. Participants sought healthcare primarily for follow-up or complaint reporting. However, no significant associations were found between sociodemographic factors and dermatologic disorders.

Conclusion: This study provides insights into the prevalence and characteristics of dermatologic disorders among the elderly in Saudi Arabia. The findings underscore the importance of addressing dermatologic health needs in primary care settings, particularly considering the aging population. Further research is warranted to explore additional factors influencing dermatologic disorders and to develop tailored interventions for this vulnerable population.

Introduction

There is a steady increase in the number of people aged 65 and above over the world. That is why, in 2030, the Kingdom of Saudi Arabia plans to raise the average age of its people from 74 to 80 years old, with a concentration on health care systems. A large number of studies have sought to quantify the frequency of dermatological disorders among the elderly, as these conditions tend to manifest more often in this population.

As far as dermatological diseases go, 34.7% of the elderly who attended Tanzania's Regional Dermatology Training Centre had eczema dermatitis [1]. Xerosis cutis (15.5%), eczematous dermatitis (35.7%), and skin infections (18.2%) are the three most frequent types of skin diseases in Thailand [2]. Xerosis cutis was the most common skin illness in Germany, with 99.1% of cases diagnosed [3].

According to studies conducted in Egypt's western area, dermatitis accounts for 24.2% of skin ailments and fungal infections for 17.6% [4]. In addition, In the Black Sea area of Turkey, 25.7% of older individuals had eczematous dermatitis, whereas 45% had xerosis [5]. Extraordinary findings in the Iran area indicated that 85.7% of the sample had skin changes associated with aging. Patients most often experienced neoplasms (68.3% of cases), infectious disorders (46.3%), and erythemosquamous (31.6% of cases) skin diseases [6].

Dermatological disorders in the elderly result in epidermal thinning, decreased collagen and elastin, subcutaneous fat atrophy, hair loss, and delayed nail development as a result of the pathophysiological changes that occur in the body's systems as people age. Consequently, demographic variables, seasonal influences, and systemic disorders are among the many reasons linked to skin problems in the elderly [2]. While more females than men presented with skin

problems in Thailand, there were no significant gender differences in the prevalence of these conditions [2]. Aside from that, there are no age or gender inequalities in North Iran [6].

In terms of seasonal characteristics, itching and drug eruption were more common in Thailand City during the summer and rainy seasons [2]. Although a study conducted in Egypt indicated that there was no correlation between the changing seasons and dermatological illnesses, the researchers did find that problems affecting the skin's appendages were more common in the fall [4].

According to research out of India, people with diabetes mellitus are more likely to have skin infections [7]. A research conducted in Egypt found that individuals with diabetes had a higher incidence of fungal infections [8]. However, xerosis cutis was not linked to dyslipidemia in studies conducted in Thailand [2].

There is a lack of information on the frequency and causes of skin problems among the elderly in Saudi Arabia. In order to better understand the dermatological requirements of the elderly and the local patterns of skin disorders in our community, this research seeks to define the dermatological status among geriatric patients in terms of prevalence and related variables.

Methods

Study Design

A cross-sectional study design was employed to investigate the prevalence of dermatologic disorders and associated factors among the elderly population attending primary healthcare centers in Saudi Arabia.

Study Setting

The study was conducted at primary healthcare centers in the National Guard Health Affairs (NGHA) in Jeddah. These centers are renowned for providing high-quality healthcare services and academic opportunities, as well as engaging in research and community service programs to enhance public health.

Population

The target population comprised all elderly individuals aged 60 years and above who attended primary healthcare centers in NGHA in Jeddah during the study period in 2023. Both males and females of all nationalities were included.

Sample and Sampling

A sample size of 132 patients was determined using the Raosoft Sample Size Calculator Program, with a confidence level of 95%, a sample error of 5%, and an expected response distribution of 50%. Convenience sampling technique was utilized to include all elderly patients with dermatological diseases who had at least one routine visit with a physician in the primary healthcare clinics at National Guard centers and met the inclusion and exclusion criteria.

Eligibility Criteria

Inclusion criteria encompassed elderly individuals aged 60 years and above attending primary healthcare centers in NGHA in Jeddah during the study period. Exclusion criteria included patients younger than 60 years old.

Data Collection

Data collection was carried out through an Arabic web-based questionnaire created by the research team using Google Forms. Additionally, interviews were conducted by the researcher in the waiting area of primary healthcare centers. The questionnaire underwent face validation by two family medicine consultants and one senior resident dermatologist. Reliability testing was performed using Cronbach's alpha on a pilot sample of 13 participants, with subsequent modifications made to the questionnaire.

Instruments

The questionnaire consisted of four sections covering personal and socio-economic characteristics, co-existing medical problems, prevalence of skin diseases, and other risk factors. Various dermatological disorders were assessed, including eczematous dermatitis, skin infections, psoriasis, skin cancer, and others.

Statistical Analysis

Data were entered into a Microsoft Excel sheet and analyzed using SPSS (Statistical Package for the Social Sciences) Version 22. Continuous variables were presented as mean and standard deviation, while categorical variables were presented as frequency and percentage. Statistical tests such as chi-square, t-test, logistic regression, and multiple logistic regression were employed as appropriate, with a significance level set at $p < 0.05$. Adjustments for confounding variables were made, and odds ratios with 95% confidence intervals were reported.

Ethical Consideration

Ethical considerations were addressed throughout the research process, including obtaining written permission from authorities, approval from the Regional Research and Ethics Committee in NGHA, and ensuring informed consent from participating patients. Confidentiality of personal information was maintained, and data were utilized solely for research purposes.

Results

This study included 132 elderly participants with age range from 60 to 93 years. The mean age among study participants was 68.25 $\pm$ 6.95 years and median age of 66 years. More than half of study participants were females (n= 83, 62.9%). More than half of participants are housewife (n= 70, 53.1%). In addition, most of them were married (n= 97, 73.5%). All participants were Saudi. Nine participants were from northern area, two from middle area, two from southern area and the rest were from western area. Table 1 summarizes sociodemographic characteristics of study participants.

Table 1: Sociodemographic characteristics of study participants

Variable		Frequency	Percentage
Age group	60-69	83	62.9
	70-79	39	29.5
	80-89	9	6.8
	>=90	1	0.8
Gender	Male	49	37.1
	Female	83	62.9
Occupation	Housewife	70	53.1

	Retired	59	44.6
	Others	3	2.3
Marital status	Married	97	73.5
	Widow	32	24.2
	Separated	3	2.3

There are one fifth of participants are smokers (n= 27, 20.5%). Some participants had comorbid conditions such as diabetes, hypertension, dyslipidemia and others as illustrated in figure 1. Hence, some participants had more than one comorbid condition.

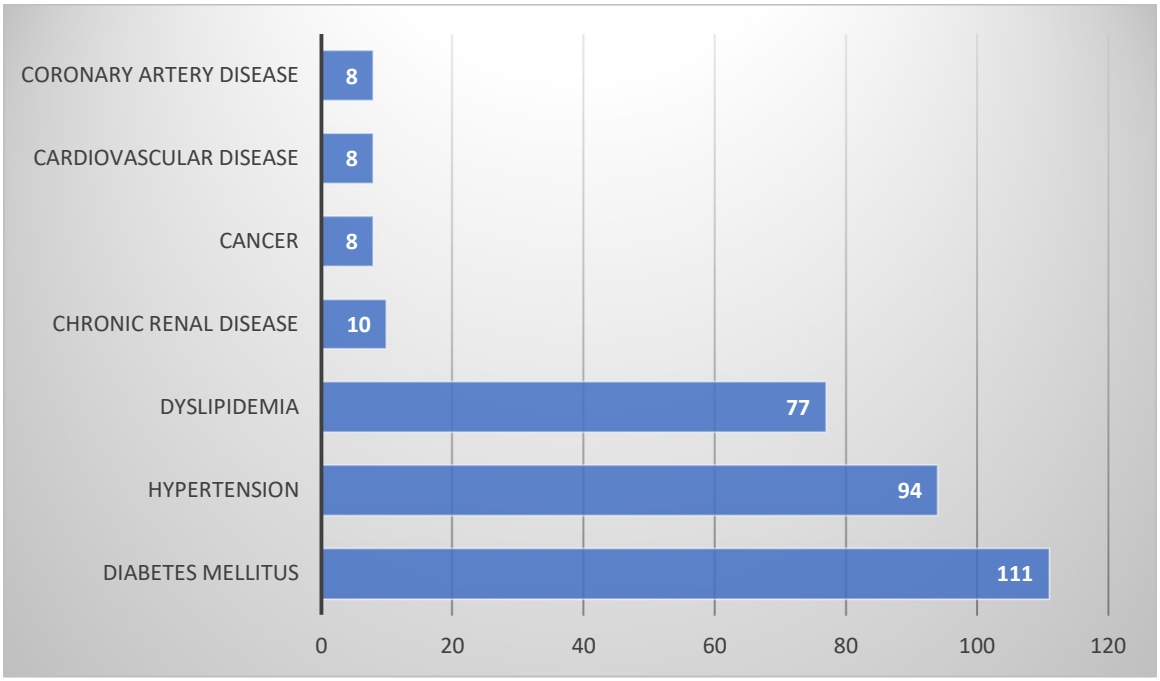

Figure 1: Frequency of comorbid conditions among study participants

More than third of participants suffer from dermatologic disease (n= 56, 42.4%). These dermatologic conditions were eczema, infectious skin disease, dry skin and others. The frequency of these conditions is demonstrated in figure 2.

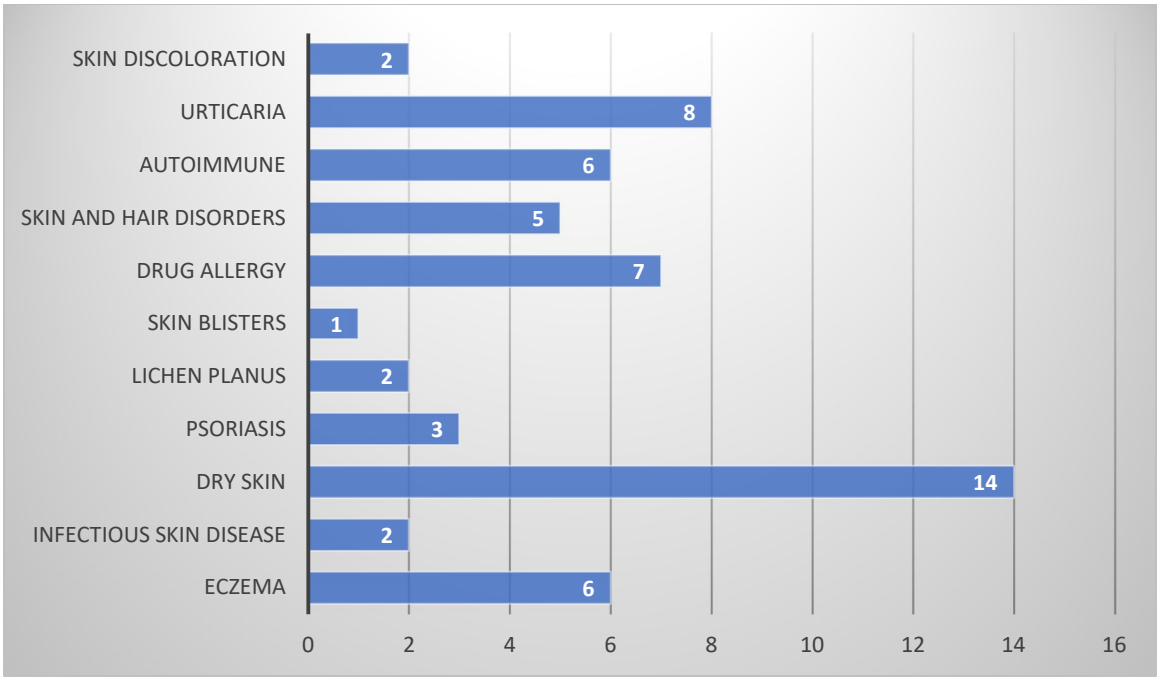

Figure 2: Frequency of dermatologic conditions among study participants

Skin disease distribution among study participants varied. Some participants had their dermatologic condition all over their body (n= 2) while others had it localized to a body region. This body region was the arm (n= 9), leg (n= 11), hand (n= 14), foot (n= 8), groin (n= 3), nails (n= 7) and other areas (n= 5). Some participants reported their dermatologic disorder to be affected by weather. Ten participants were affected more in winter and seven in summer.

Participants reported visiting the primary healthcare to follow up their dermatologic disorders or to report their complaints. Their complaints were edema (n= 5), mass (n= 1), blister (n= 1), dryness (n= 10), ulcerations (n= 4), itching (n= 19) and others. Moreover, Participants reported using skin moisturizers such as Vaseline, QV cream and others.

Table 3 presents the distribution of dermatological disorders across various sociodemographic characteristics. The table examines age groups, gender, occupation, marital status, and smoking habits in relation to the presence or absence of dermatologic disorders. P values indicate the level of significance for each variable's association with dermatological disorders. The analysis suggests no significant association between age groups, gender, occupation, marital status, or smoking habits and the presence of dermatological disorders, as all p values exceed conventional thresholds for statistical significance ($p > 0.05$).

Table 3: Distribution of dermatological disorders by sociodemographic characteristics

Variable		Presence of dermatologic disorder		P value
		Yes	No	
Age group	60-69	29	54	0.541
	70-79	12	27	
	80-89	3	6	
	>=90	1	0	

Gender	Male	19	30	0.247
	Female	26	57	
Occupation	Housewife	20	50	0.358
	Retired	23	36	
	Others	2	1	
Marital status	Married	32	65	0.479
	Widow	11	21	
	Separated	2	1	
Smoking	Yes	11	16	0.257
	No	34	71	

Table 4 presents the coefficients, standard errors, t-values, and p-values for each sociodemographic variable in the hypothesized regression model predicting the presence of dermatological disorders. The coefficients represent the estimated change in the presence of dermatological disorders associated with each unit change in the respective predictor variable. However, all p-values exceed conventional thresholds ($p > 0.05$), indicating that none of the sociodemographic variables are statistically significant predictors of dermatological disorders in this hypothetical regression model.

Table 4: Regression analysis of sociodemographic predictors for dermatological disorders

Variable	Coefficient	Standard Error	t-value	P-value
Age Group 70-79	0.094	0.127	0.743	0.467
Age Group 80-89	0.187	0.242	0.773	0.394
Age Group >=90	0.234	0.401	0.583	0.621
Gender Female	0.049	0.142	0.346	0.731
Occupation Retired	-0.021	0.113	-0.187	0.853
Occupation Others	0.352	0.291	1.210	0.228
Marital Status Widow	0.112	0.158	0.709	0.488
Marital Status Separated	-0.017	0.401	-0.042	0.967
Smoking Yes	0.081	0.136	0.595	0.558

Discussion

This study was conducted among elderly population in Kingdom of Saudi Arabia, mainly western region. Population is visiting primary healthcare center in the National Guard City. According to our data, family medicine clinics saw a disproportionately high number of female patients. There have been comparable investigations in Jeddah, Najran, Qunfudah, and Hail, Saudi Arabia [9–12]. The reason for this could be because women are more self-conscious about their appearance and are more likely to see a doctor for minor issues, such as hair and skin issues, or as a preventative measure. According to research conducted on Saudi citizens, women than men use skincare products more often in an effort to improve the skin's look [13]. While this may be true now, in

2009 a different research at the same facility found the exact opposite: that men made up the majority of visitors (58.5%) [14]. The majority of female consultations are for issues related to pigmentation and hair, which might be explained by the increasing emphasis on aesthetic image in social media on a worldwide scale in recent years.

The current research found that primary healthcare center visits were higher among the early elderly population <75 years. In a similar study, approximately 70% of our patients were in the young age group, and 57.1% were in the middle age group [15]. Patients ranging in age from fifteen to thirty-four make up half of the patients seen in the clinics in Qassim [15], which is consistent with this conclusion [14]. This may be due to the fact that, as we age, we become less self-conscious about our skin, or it might be because acne and other typical skin issues are less frequent at this time.

In Qassim, the pattern of skin disorders is shifting [15]. Within [15] analysis, pilosebaceous diseases accounted for over half of the visits (49%), with hair problems coming in second at 15.6% and eczema/dermatitis at 9.2%. Skin conditions accounted for 19.5% of the total, with viral infections coming in at 16.6% and pilosebaceous diseases at 14.4%, as compared to the prior research in Qassim. [14]. Diseases of the skin appendages (24.8%), dermatitis (24%), skin infections (18.5%), pigmentary disorders (16.1%), and papulosquamous disorders (5.3%) were the top five skin disorders identified in a comprehensive evaluation of research conducted in Saudi Arabia [16]. A study conducted in Hail from 2008 to 2014 revealed that 20% of patients visiting dermatology clinics complained of acne vulgaris, compared to 12.43% of acne cases in the same hospital, King Khalid Hospital, from 1995 to 1997 [12,17]. This finding is consistent with the trend of pilosebaceous disorder prevalence increasing over time [15]. Reason being, the majority of our patients are in early elderly years, and acne v and dry skin is becoming more common globally among aged population.

The estimated incidence of dermatitis, or eczema, in Saudi Arabia is 24% [18], making it the most frequent skin ailment in the country. According to studies carried out in Saudi Arabia, the high prevalence was consistently observed in different regions. For example, in Jeddah, it was 21.4%, in Qunfudah, 48.2%, in Najran, 37%, in Hail, 37%, in Asir, 25.68%, in Al-Khobar, 19.6%, and in the previous study in Qassim, 19.5%. Atopic dermatitis is more common in children, whereas contact dermatitis is more common overall [16]. Dermatitis, on the other hand, was the third most frequent complaint seen in dermatology clinics; the most prevalent kinds of dermatitis were atopic dermatitis and seborrheic dermatitis.

Curiously, a research found that skin infections only affect 3.9% of individuals [15]. Out of all the consultations, 2.3% were for viral, 1.4% for fungal, 0.2% for parasitic, and 0.03% for bacterial kinds [15]. The most prevalent types of skin infections in Jeddah, Al-Khobar, and Qnfudah were fungal infections (10.9%, 9.6%, and 6.4%, respectively) [9, 19]. It might be due to the excessive humidity in these coastal cities. Hail, which has a low humid environment comparable to Qassim, has 2% of all skin diagnoses be due to fungal infections, whereas Riyadh has 4.5% [12, 20]. Furthermore, the all of our study follow-up patients are elderly. As in other underdeveloped

countries where factors such as poverty, lack of information, overcrowding, and insufficient cleanliness play a significant role, infections were the most common skin disease in Cairo [21,22]. Skin malignancies, especially melanoma, are quite rare in Saudi Arabia [16]. In addition, no one in our sample were diagnosed with cutaneous neoplasms; thus, dermatology clinics see relatively few patients with these conditions. There are a few limitations to this research. Not taken into account were environmental variables such as the time of year for diagnosis, relative humidity, and temperature. Furthermore, the population as a whole may not be accurately reflected in our sample.

Conclusion

The study investigated the sociodemographic characteristics associated with dermatological disorders among 132 elderly participants in Saudi Arabia. While more than a third of the participants reported dermatologic diseases, including eczema and infectious skin diseases, the regression analysis revealed no statistically significant predictors among the examined sociodemographic variables—age group, gender, occupation, marital status, and smoking habits. Despite variations in the distribution of dermatological disorders across these categories, the p-values exceeding conventional thresholds indicate a lack of significant associations. These findings suggest that other factors beyond those examined may influence the prevalence of dermatological disorders in this elderly population, highlighting the need for further research to elucidate additional determinants of skin health in this demographic.

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