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Research Article

Assessment of the Magnitude and Associated Factor of Psoriasis at Saint Paul's Hospital Millennium Medical College among Patients Attending Dermatology Clinic, Addis Ababa, Ethiopia

Fantahun Abza Babeta*, Tsion Demissie Biza

Department of Dermatology, Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia

ABSTRACT

Background: Psoriasis is a chronic, inflammatory skin disorder resulting from a genetic predisposition combined with environmental triggers characterized by sharply demarcated erythematosus whitish scaly plaques. It may be associated with psoriatic arthritis, metabolic syndrome and other diseases. The prevalence is approximately 2% of the world's population. Two peaks in the age of onset have been reported early-onset psoriasis at 20-30 years of age and late-onset psoriasis at 50-60 years of age, which are equal in both sexes.

Objectives: This study aimed to assess the magnitude and associated factors of psoriasis from October 2021 to June 2022 at Saint Paul's Hospital Millennium Medical College Addis Ababa.

Methods: A hospital based cross-sectional prospective study was conducted from October 2021 to June 2022. A total sample size of 422 patients aged 11 and above years was included in the study. Then, using SPSS version 21.0 the data were entered and analyzed. Descriptive analysis was performed to characterize the study participants. Bivariate and multivariable logistic regression was performed to determine the crude and independent predictors of the dependent variable. AORs with 95% CIs were used to determine the independent predictors of psoriasis. Statistically, a significant association was considered at a p value<0.05.

Results: In this study, the magnitude of psoriasis was found to be 6.01% (95% CI: 11.6, 18.7). Moreover, in the multivariable logistic regression model, educational status AOR (95% CI)=0.054, (0.01-0.30). The patients' AOR (95% CI)=34.90, (8.27-147.30) stress history was a significant predictor of psoriasis.

Conclusion: In this study, 6.01% of patients were found to have psoriasis. Therefore, the findings need to give great attention to strengthening national skin disease prevention and control services and implementing public health policies on the awareness, prevention and treatment of psoriasis patients to keep care of skin and not neglect disease contact health facility services.

Keywords: Psoriasis; Cross-sectional study; Inflammatory skin diseases; Plaque psoriasis

Abbreviations: ALERT: All Africa Leprosy, TB and HIV Research, Rehabilitation and Training Center; ARH: Ayder Referral Hospital; AOR: Adjusted Odd Ratio; COR: Crud Odd Ratio; PSO: Psoriasis; OPD: Outpatient Department; QoL: Quality of Life; SPHMMC: Saint Paul's Hospital Millennium Medical College; SPSS: Statistical Packages for Social Science

Correspondence to: Fantahun Abza Babeta, Department of Dermatology, Saint Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia; E-mail: Fantahunabza13@gmail.com

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INTRODUCTION

Background

Psoriasis is a chronic, inflammatory skin disease that results from a genetic predisposition combined with environmental triggers characterized by sharply demarcated erythematous whitish scaly plaques. May be associated with psoriatic arthritis, metabolic syndrome and other diseases. The prevalence is approximately 2% of the world's population. Psoriasis can first appear at any age, from infancy to the eighth decade. Two peaks in the age of onset have been reported early-onset psoriasis at 20-30 years of age and late-onset psoriasis at 50-60 years of age. Equal in both sexes (age of onset is earlier in women than in men). Psoriasis can also be provoked by external and internal triggers, including mild trauma, sunburn and QoL, which are often significantly impaired. Disfiguration, disability and marked loss of productivity are common challenges for people with psoriasis. There is also a significant cost to mental well-being, such as higher rates of depression, leading to a negative impact on individuals and society [1].

Statement of the problem

Skin issues square measure typically the foremost common diseases seen in medical care settings everywhere in the world, and its prevalence ranges from 20%-50% in developing countries. Compared with different diseases, skin diseases have a lower death rate but will have an effect on welfare, quality of life and health conditions. Within the case of African countries, drawback skin condition disease is taken into account as a standard problem in each urban and rural area and is among the leading causes of patient attendance. Studies conducted on skin diseases by the Ministry of Health indicated that skin diseases were the eighth explanation for patient visits in African countries in 2004/05 and 2006/07. Several parts influence the pattern and burden of skin diseases in resource poor settings, together with financial conditions and environmental and climatic factors. Sickness disease of the skin disorder skin problem skin condition is one such kind of disease among numerous skin diseases affecting over one hundred twenty five million individuals or nearly three-D of the world's population. Sadly, Ethiopian-specific data concerning true medicine for skin conditions are very restricted. This implies that we tend to square measure inadequate knowledge to manage a silent epidemic with sizable social group impact, both socially and economically. Certainly, evidence has shown that skin conditions will have an effect on a patient's quality of life to tier comparable different chronic conditions, together with infarct and a few cancers [2].

Significance of the study

Although psoriasis is rarely life threatening, its morbidity and associated comorbidities have a severe negative impact on the quality of life of patients and confer a certain socioeconomic burden. Especially in developing countries, people with psoriasis have to face severe problems with stigmatization, embarrassment, discrimination, low self-esteem and negative attitudes in general among the public and often bear the brunt of public rejection. This research project helps to improve the current health status of psoriatic patients by assessing the magnitude of the diseases. Additionally, this finding of this study directly benefited patients as well as indirectly benefited public health by reducing further disabilities and the burden of health care resources by knowing the magnitude and associated factors of psoriatic patients in SPHMMC [3].

Magnitude and sociodemographic characteristics of psoriasis

Psoriasis is a relatively common condition, affecting between 1%-3% of the population worldwide (2%-4% of the European and North American population), numbers that have been increasing during the past forty years. There is a marked prevalence variation in which genetic and environmental factors such as age, gender, race, ethnicity and geographic location (climate and sun exposure) contribute. Two clinical types of psoriasis can be considered relating to the age of onset type I-early onset (≤ 40 years) and type II-late onset (>40 years). Regarding type I, which accounts for 70% of all cases, the highest incidence rates are seen between 16 and 22 years, while for type II, the peak occurs between 57 and 60 years. Psoriasis causes sizable psycho-social incapacity and has a major impact on patients' quality of life. The value to each patient and healthcare system is high skin disorder, which is related to upset, depressive wellness and rheumatoid arthritis. Higher prevalence rates are rumored at higher latitudes and in Caucasians compared with different ethnic teams. Additionally, the wide variation in prevalence estimates could also be influenced by aspects of disease of the skin, such as its remitting-relapsing course, diversity of clinical displays and variation in severity complete of seven. 2 million North American nation adults had skin problems in 2010; associate in nursing calculable seven. 4 million North American nation adults were affected in 2013. The prevalence of psoriasis among US adults has not changed significantly from 2003 to 2004. When stratifying the sample by race among those between ages 20 and 59 years, the psoriasis prevalence was highest in Caucasians at 3.6%, followed by African Americans at 1.9%, Hispanics at 1.6% and others at 1.4%. A study performed in Norway reported a prevalence of 1.4%, with no difference between males and females. A higher prevalence of psoriasis among females was found in urban areas and a higher prevalence was found in females. No difference in prevalence was found between various socioeconomic groups [4].

In another study at a dermatology clinic in a general hospital in the Port of Spain, Trinidad and Tobago, three hundred and seventy-nine cases (5.1% of the total cases) of psoriasis were diagnosed. There were 183 females (48%) and 196 males (52%). The mean age at presentation for females was 44 years and that for males was 43 years. The majority of cases (77%) presented between 20-69 years. In contrast, studies from Denmark, Germany and Sweden reported a prevalence measure that was slightly higher in girls than in boys. A study conducted in Taiwan showed that (prevalence=0.235%; mean age=46.4 ± 18.6; male: female=1.6:1). Other studies in Taiwan showed that the prevalence of psoriasis was 0.23% for men and 0.16% for

women. The prevalence of psoriasis increased more rapidly in male patients aged 30 years. There was no difference in the prevalence of psoriasis between boys and girls in Brazil and Taiwan. Population-based surveys from China and Japan have given a similar low prevalence ranging from 0.05 to 1.23% and 0.29 to 1.18%, respectively. The same rates were found in India (0.5%-2.3%). A population-based survey conducted in China in six cities out of 17,345 subjects showed that 102 subjects (0.59%) had psoriasis. The prevalence of psoriasis in males and females was 0.54% and 0.44%, respectively. A community-based study conducted in Japan showed males (65.8%) and females (34.2%). Six studies according to the prevalence of skin disorders in young people (defined as those aged<18 years) in Europe or Asia. In general, the prevalence of skin disorders in young people was up to zero. 71% in Europe and virtually absent in Asia. One exception was a study of 13 to 14-year-old young people in Italy that found a lifespan prevalence of specialist-diagnosed skin disorder of 2.15% (95% Confidence Interval (CI): 2.59-2.61). A German study supported associated insurance information and confined that for those aged younger than eighteen years, the overall prevalence of skin disorders in young people (0.71% (95% CI: 0.68-0.74)) increased with age (0.37% for 0-9 years and 1.01% for 10-18 years). Not amazingly, studies supporting lifespan prevalence typically yielded higher estimates than that supporting purpose prevalence. A study conducted in Egypt at the Medicine Clinic, AL Hussein University Hospital showed that fifty-two percent of the cases were females and four hundred forty yards of cases occurred 25-45 years, followed by 37.0% (45 years, the typical age of onset was thirty-one years. Curiously, clinical and population surveys have shown nice variability between totally different desert African populations. These results indicate that West African countries such as Nigeria, Ghana, Mali, Senegal, Angola, etc., have a lower prevalence of skin disorders of 0.05 you have to 1 Chronicles than three-D within jap countries such as the Republic of Kenya, Republic of Uganda and African countries. Data on the prevalence of skin disorders in African countries is extraordinarily limited; however, knowledge on the incidence of skin disorders at a given clinic or hospital over an outlined amount of time is additional. Whereas the incidence rate at a clinic could fail to mirror the native prevalence of skin disorders, the relative rates of skin disorder incidence obtained from clinics were retrieved and reviewed. A total of 2342 medical cases were diagnosed at the ALERT pathology laboratory from January 2007 to December 2010, which represent a large variety of inflammatory, infectious and growth diseases. Throughout this era, out of twenty-seventh (632) inflammatory dermatoses, 6.64% were diagnosed with skin disorders. The magnitude of skin disorder in ARH, Mekele and North African countries was 5.4% [5].

Clinical and behavioral characteristics of psoriasis

Psoriasis vulgaris accounts for 97.06% and a family history of psoriasis accounts for 28.43%. The vast majority of cases (86.0%) had the plaque form of psoriasis vulgaris and 812 cases (2.8%) had guttate psoriasis. Psoriatic erythroderma (0.8%), generalized pustular psoriasis (0.9%) and localized pustular psoriasis (0.5%) were rare (19). Another study was conducted at the dermatology clinic in Hospital Tengku Ampuan Rahimah, Klang Malaysia and the prevalence of psoriasis was 9.5%. In this study, psoriasis was found to be more common in males (11.6%, 316/2613) than in females (7.2%, 215/2994). The most commonly affected sites were the arms (53%), followed by the legs (44%) and the trunk (15.9%), genital region (12.4%), scalp (11.8%), eyebrows (6.8%) and face (2.4%). There is an outsized body of literature associating stress and the development or exacerbation of psoriatic lesions. From the literature, it is doable to spot a subcluster of psoriatic patients United Nations agency seem to be high stress reactors. These patients report that psychosocial stress exacerbates their skin disorders. In a survey involving 2144 psoriatic patients, four-hundredth indicated that psoriatic lesions appeared at “times of worry". In a very n plan to additionally characterize patients, the United Nations Agency reported an increase in psoriatic symptoms in response to Fret and Gupta established a broad sufferer body covering profile of patients. The United Nations Agency used low-frequency reactors according to high-stress reactors versus low-stress reactors. They were asked to reply to the following statement “Nerve-racking things often create my skin disorder worse." The patients were asked to record their responses on an associated 0-point scale with one denoting "not at all" and ten "very markedly." The median score was seven. Patients with various seven or higher were classified as “high-stress reactors" and people with ratings of I to six were classified as "low-stress factors." In a very study of 127 consecutive psoriatic patients, high-stress reactors exhibited additional cosmetically disfiguring illness in conspicuous areas (*i.e.*, scalp, face, neck, forearms, hands, sex organ region). The magnitude of skin disorder in ARH, Mekele, North African countries was 5.4%, wherever the majority (81%) of skin disorder cases was chronic plaque. Multiple website involvement (42.9%) (Arms, trunk and leg) was the most common characteristic. In past surveys from 1982 to 2012, the exasperating factors for the Japanese population were determined to be stress (6.4% to 16.6%), seasonal factors (9.7% to 13.3%), infection (3.5% to 8.3%), sun exposure (1.3% to 3.5%) and β-blockers (0.9% to 2.3%). The comorbidities included cardiovascular disease (1.1% to 27.8%), Diabetes (DM) (7.0% to 13.9%), vas diseases (4.2% to 8.1%) and inflammation (3.5% to 5.4%) (Figure 1) [6].

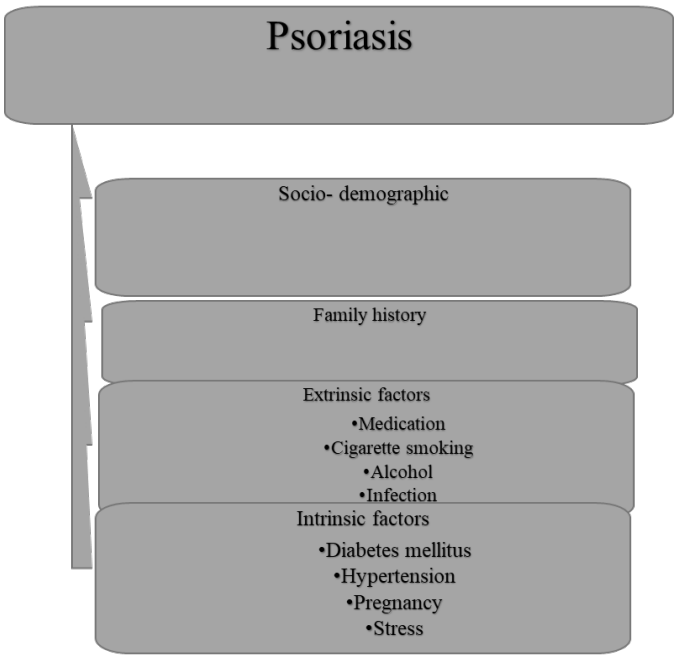

Figure 1: Conceptual framework.

Objective

General objective: To assess the magnitude and associated factors of psoriasis at Saint Paul's Hospital Millennium Medical College among patients attending the dermatology clinic in Addis Ababa, Ethiopia.

Specific objective: To describe the magnitude of psoriasis at Saint Paul's Hospital Millennium Medical College among patients attending dermatologic clinics. Addis Ababa, Ethiopia.

To determine factors associated with psoriasis at Saint Paul's Hospital Millennium Medical College among patients attending dermatologic clinics. Addis Ababa, Ethiopia.

To assess the clinical features and clinical variants of psoriasis at Saint Paul's Hospital Millennium Medical College among patients attending dermatologic clinics. Addis Ababa, Ethiopia.

MATERIALS AND METHODS

Study area

The study was conducted in St. Paul's Hospital is one of the second largest specialized tertiary referral hospitals in the country. It is located in Addis Ababa [7].

It was established in 1969 by Emperor Haile Selassie I with the help of the German Evangelical Church with the objective of serving poor people. Medical college was formed in 2007. The hospital currently provides a wide range of services in the various departments. The dermatolovenereolgy department is one of the various departments that provide a wide range of services in dermatology outpatient clinics. The dermatology clinic sees an average of 60-80 outpatient clients daily.

Study design

A hospital-based cross-sectional study was performed at Saint Paul's Hospital Millennium Medical College, Addis Ababa.

Study period

The study period was conducted from October 15, 2021, to June 1, 2022, at Saint Paul's Hospital Millennium Medical College, Addis Ababa.

Population

Source population: All patients visited the dermatology clinic of Saint Paul's Hospital Millennium Medical College and were above years old.

Study population: All psoriatic patients who visited the dermatology clinic of Saint Paul's Hospital Millennium Medical College and fulfilled the inclusion criteria were selected during the study period.

Inclusion and exclusion criteria

Inclusion criteria: All patients aged above 10 years who visited the dermatology clinic of Saint Paul's hospital Millennium Medical College were included during the study period (October 15, 2021-June 1, 2022).

Exclusion criteria: All patients aged less than 10 years who visited the dermatology clinic of Saint Paul's Hospital Millennium Medical College were included during the study period (October 15, 2021-June 1, 2022).

Sample size determination

The sample size for this particular study was calculated using a formula for a single population proportion considering the following assumptions: A 95% confidence level and margin of error. (0.05 and assumed maximum variability (p=0.5). These parameters were substituted in the following single population proportion formula:

$$n = \frac{(Z\ \alpha/2)^2\ P\ (1-P)}{d^2}$$

Where:

n: the desired sample size

P: Assume maximum variability (50%). Critical value for normal distribution at 95%

Zα/2: Confidence level, which equals 1.96 (z value=0.05)

D: The margin of error taken as 0.05

$$n = \frac{(1.96)^2 \times 0.5\ (1-P)}{0.05^2}$$

$$n = 384.$$

With the assumptions of the 95% Confidence Interval (CI) and 10% nonresponsive rate, the total sample size will be 422.

Sampling procedure

In this study, at least for 8 months, it was estimated that there were <40 psoriatic patients. I used all the samples until they fulfilled the calculated sample size during the time of data collection.

Operational definition of variables

Psoriasis: A skin lesion that presents with characteristic features of well demarcation adherent silvery scaly and erythematous background on the skin or is diagnosed as psoriasis by a dermatologist. Psoriatic nail change pits range from 0.5 to 2.0 mm in size, with oil spots and salmon patches on the nail of psoriatic patients.

Alcohol use: Respondents who answered YES to the question "have you used/drunk at least one of the alcoholic beverages (beer, wine, whiskey, Areke, Tela, Tej, etc.) for nonmedical purposes within the last 3 months?" were considered alcohol users.

Current smoker: Respondents who answered YES to the question "have you used/smoked more than 100 cigarettes (including hand-rolled cigarettes, cigars, cigarillos, etc.) in their lifetime and have smoked in the last 28 days" were considered current smokers.

Ex-smoker: Respondents who answered YES to the question "have you used/smoked more than 100 cigarettes (including hand-rolled cigarettes, cigars, cigarillos, etc.) in their lifetime but have not smoked in the last 28 days" were considered smokers.

Never smoke: Respondents who answered no to the question "have you used/smoked more than 100 cigarettes in their lifetime and does not currently smoke" were considered nonsmokers.

Study variables

Dependent variables: Psoriatic disease.

Independent variables: Age, sex, marital status, residence, occupation, educational status, alcohol, drugs, stress family history, DM, hypertension and smoking.

Data collection methods

A structured interview questionnaire was conducted among patients or families during the Opd visit. The questionnaire was adopted from reviewing different literature. Some modifications were made based on the research objective. Two dermatology residents and one nurse supervisor working in the OPD of the dermatology clinic in St. Paul's Hospital Millennium Medical College was recruited for data collection purposes. The data collectors and supervisors received daylong training on the objectives and benefits of the study, individuals' rights and informed consent. Close-ended questions were used to collect data. On a daily basis, a completed questionnaire was checked for completeness and consistency by the supervisor [8].

Data quality management: Sociodemographic factors, personal disease, skin physical examination and personal associated factors were assessed using a standardized questionnaire from different literature. The questionnaire was prepared in English and translated to the Amharic version and later translated back to English using a standard translation procedure to maintain its consistency. Appropriate training was given for both data collectors and supervisors. Prior to the actual data collection, the questionnaire was pretested on 5% of the participants. Based on the pretest, necessary modification was performed on the questionnaire. In addition, the supervisor conducted supervision each day. The completed questionnaires were handled properly and checked for completeness, clarity and logical consistency by the principal investigator and supervisor.

Data analysis: Immediately after the data collection was completed, the data were coded and entered into Statistical Package for Social Science (SPSS) version 21.0 software for analysis. Statistical significance of binary logistic regression cut point P<0.05 was used and bivariate logistic regression P<0.05 was used as cut off point to select and transfer variables into multivariate logistic regression. COR and AOR were used to determine the association between dependent and independent variables. The results are presented using descriptive statistics such as frequencies, tables, graphs, and percentages [9].

RESULTS

Sociodemographic characteristics

From the total of 422 identified dermatologic cases at dermatologic OPD, 416 were included in the analysis, yielding a response rate of 98.5%. A total of 277 (54.6%) were males and 245 (58.9%) were aged 30-40 years [10]. Three hundred eighty (91.3%) of the study participants were from urban areas, whereas 36 (8.7%) were from rural areas. 191 (45.9%) and 225 (54.1%) were married and unmarried. One hundred forty five (34.9%) respondents had attended primary school, 193 (46.4%) secondary school, 67 (16.1%) had a diploma and above level of education and 11 (2.6%) were unable to read and write. One hundred sixty (38.5%) were government employees by occupation and nearly one fourth of the respondent patients were unemployed (105, 25.2%) (Table 1) [11].

Table 1: Sociodemographic characteristics of patients in St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2022 (n=416).

Variables	Category	Number	Percent
Sex	Male	277	54.6
	Female	189	45.4
Age (years)	11-29	99	23.8
	30-40	245	58.9
	>40	72	17.3
Residency area	Urban	380	91.3
	Rural	36	8.7
Marital status	Married	191	45.9
	Unmarried	225	54.1
Educational status	Diploma and above	67	16.1
	Secondary school	193	46.4
	Primary school	145	34.9
	Unable to read and write	11	2.6
Occupational status	Government	160	38.5
	Private employed	94	22.6
	Merchant	47	11.3
	Farmer	10	2.4
	Unemployed	105	25.2

Clinical characteristics of psoriasis

In this study of the 416 patient respondents, 25 of whom were diagnosed with psoriasis according to typical clinical features, sites had an overall prevalence of 6.01% (95% CI: 11.6, 18.7) (Figure 2) [12].

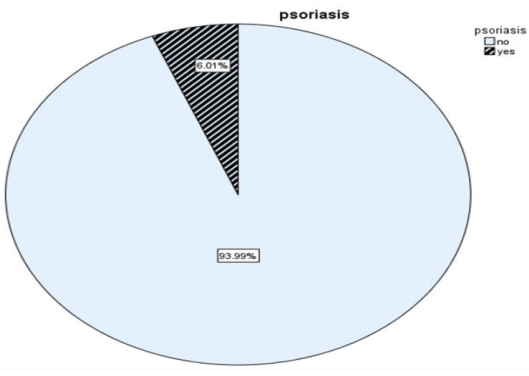

Figure 2: The magnitude of psoriasis in St. Paul's Hospital Mill Millennium College, Addis Ababa, Ethiopia, 2022.

Of these, 15 (60%) were males and 10 (40%) were females. Psoriasis was higher among urban residents (22 (88%)) than among rural residents, with only 3 diagnosed with psoriasis. Out of psoriasis patients diagnosed, 15 (60%) and 10 (40%) were married and unmarried, respectively. Most of the psoriasis diagnosed respondents had an education status of 15 (60%) secondary school. Among these, 12 (48%), 6 (24%), 3 (12%), 1 (4%) and 3 (12%) cases of psoriasis were detected with government employed, private employed, farmer, merchant and unemployed, respectively. In this study, most of the respondents diagnosed with psoriasis were aged 30-40 years 15 (60.0%) (Figure 3) [13].

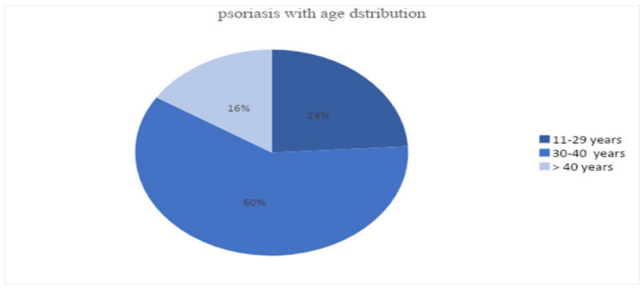

Figure 3: The magnitude of psoriasis, distribution within age category in St. Paul's Hospital Millennium, Medical College, Addis Ababa, Ethiopia, 2022 (n=25).

Based on typical clinical features and sites, among psoriasis diagnosed respondents, erythematous plaque/papules with silvery scaly lesions were commonly found among psoriasis diagnosed participants 25 (100%) (Table 2) [14].

Table 2: The characteristics of clinical factors among respondent patients in St. Paul's Hospital, Addis Ababa, Ethiopia, September-March 2022, (n=416).

Variables	Category	Number	Percent
Psoriasis	Yes	25	6.01
	No	391	93.99
How long have you had skin lesion	<1 year	356	85.6
	Greater than or equal to 1	60	14.4
Skin lesions itchy	Yes	356	85.6
	No	60	14.4
Erythematous plaque/papule with silvery scaly lesion	Yes	25	6.0
	No	391	94.0
Lesions involved area	Extensor surface of extremities	86	20.7
	Face	90	21.6
	Scalp	110	26.4
	Trunk	99	23.8
	Palm and sole	31	7.5
Chronic plaque psoriasis	Yes	17	4.1
	No	399	95.9
Guttate psoriasis	Yes	7	1.7
	No	409	98.3
Erythroderma psoriasis	Yes	0	0
	No	416	100
Pustular psoriasis	Yes	1	0.2
	No	415	99.8

According to the clinical variant of psoriasis, among the psoriasis diagnosed respondents, 17 (68.0%), 7 (28.0%) and 1 (4.0%) had guttate psoriasis and pustular psoriasis, respectively (Table 3) [15].

Table 3: Characteristics of respondents' clinical factors among psoriasis patients diagnosed according to clinical subtype of psoriasis in St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2022 (n=25).

Variable	Category	Number	Percent
Chronic plaque psoriasis	Yes	17	68
	No	8	32
Guttate psoriasis	Yes	7	28
	No	18	72
Erythroderma psoriasis	Yes	0	0
	No	25	100
Pustular psoriasis	Yes	1	4
	No	24	96

Most of the psoriasis diagnosed respondents experienced itchy manifestations (20. 80%). In this study, 19 (76%) participants were diagnosed with psoriasis with a lesion duration greater than or equal to one year. Additionally, the lesion was mostly found on the extensor surface of the extremities (12 (48.0%)) and on 6 (24.0%) scalps, 5 (20.0%) trunks and 2 (8.0%) palm and sole surface areas (Figure 4) [16].

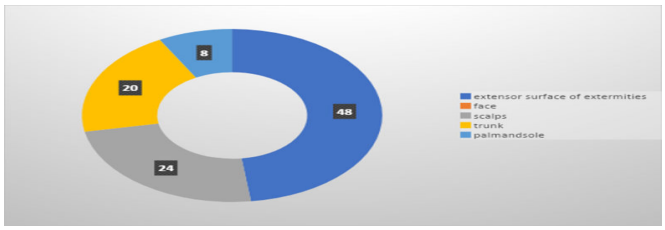

Figure 4: Distribution of lesions in psoriasis diagnosed participants in St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2022 (n=25).

Clinical and behavioral related factors

In this study, out of psoriasis diagnosed participants, 4 (16%) had a family history of psoriasis. Most of the skin lesion exacerbations of respondents with psoriasis showed 19 (76%) cases of stress and 7 (28%) cases of upper respiratory tract infection. Among participants who had psoriasis, 1 (4%) had a personal history of diabetes mellitus and 1 (4%) had a history of hypertension. Respondents with psoriasis of 2 (8%) and 4 (16%) had a history of cigarette smoke and alcohol drink, respectively (Table 4) [17].

Table 4: Characteristics of respondents clinical factors among psoriasis diagnosed according to clinical and behavioral related factors n St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2022 (n=25).

Variables	Category	Number	Percent
Has anyone in your family had psoriasis?	Yes	4	16
	No	21	84
Does the medication exacerbate your skin lesion?	Yes	1	4
	No	24	96
Stress exacerbate your skin lesion	Yes	14	56
	No	11	44
RTI exacerbate your skin lesion	Yes	7	28
	No	18	72

Pregnancy exacerbate your skin lesion	Yes	2	8
	No	23	92
Do you have diabetes mellitus?	Yes	1	4
	No	24	96
Do you have hypertension?	Yes	1	4
	No	24	96
Do you smoke cigarettes?	Yes	2	8
	No	23	92
Do you drink alcohol	Yes	4	16
	No	21	84

Factors related to psoriasis

Using binary logistic regression, the relationship between sociodemographic factors and psoriasis was assessed. Accordingly, sex, age, residency, marital status, educational status and occupational status were assessed in psoriasis patients. In a crude analysis, psoriasis was significantly associated only with educational status. In addition, respondents whose secondary school level of education were 0.56 times COR (95% CI)=0.56, (0.10-0.325) were more likely to develop psoriasis compared to those with primary school and diploma and above educational status. Psoriasis was not statistically associated with sex, age, residency, marital status or occupational status (Table 5) [18].

Table 5: Factors associated with psoriasis among patients in St. Paul's Hospital, Addis Ababa, Ethiopia.

Variable	Psoriasis		COR (95%CI)	AOR (95%CI)	P-value
	Yes n (%)	No n (%)			
Educational status					
Diploma and above	4	59	0.16 (0.32-0.89)	0.19 (0.03-1.05)	0.057
Secondary school	15	180	0.56 (0.10-0.32)*	0.054 (0.01-0.30)*	0.001**
Primary school	3	144	0.22 (0.54-0.93)	0.17 (0.02-0.14)	0.138
Unable to read write	3	8	1.00	1.00	
Stress					
Yes	14	14	34.27 (13.21-88.88)*	34.90 (8.27-147.30)*	0.000**
No	11	377	1.00	1.00	
Upper respiratory infection					
Yes	7	3	50.29 (12.00-210.73)	4.34 (0.70-26.92)	0.115
No	18	388	1.00	1.00	
Pregnancy					
Yes	2	5	6.71 (1.23-36.48)	5.35 (0.32-87.21)	0.239

No	23	386	1		
Cigarrate smoking					
Yes	2	4	8.41 (1.46-48.35)	1.86 (0.12-27.47)	0.65
No	23	387	1.00		
Alchol drinking					
Yes	4	6	12.2 (3.20-46.64)	2.76 (0.38-19.93)	0.313
No	21	385	1.00	1.00	

In this study, stress, upper respiratory tract infection, pregnancy, cigarette smoking and alcohol drinking behaviors were found to be significantly associated with the development of psoriasis disease in participants. Psoriasis patients who had a stress history were 34.27 times more likely to have COR (95% CI)=34.27, (13.21-88.88) more likely to have psoriasis disease than those who did not have a stress history. Participants who had an upper respiratory tract infection also had 50.29 times higher odds of developing psoriasis disease than those who were free of a history of upper respiratory tract infection (COR, (95% CI)=50.29, (12.004-210.73)). Pregnancy history had 6.7 times the COR (95% CI)=6.71, (1.23-36.487) higher odds of having psoriasis compared to those who did not have a history of pregnancy. Moreover, cigarette smoking and alcohol drinking behaviors were significantly associated with the development of psoriasis. A cigarette smoking history of behavior was 8.41 times the COR (95% CI)=8.41, (1.46-48.35) higher odds of having psoriasis disease compared to those patients who were free of cigarette smoking behavior. A history of alcohol consumption was 12.22 times the COR (95% CI)=12.22, (3.20-46.64) higher odds of having psoriasis disease than a history of alcohol consumption. However, family history of psoriasis, lesions exacerbated by drug use behavior, history of diabetes mellitus and history of hypertension were not associated with psoriasis disease in this study (Table 4).

Multivariable analysis

To identify independent predictors of psoriasis disease, those variables that showed statistically significant associations in a crude analysis were included in a multivariable logistic regression model. Accordingly, among sociodemographic factors, only educational status was found to be an independent predictor for the development of psoriasis disease. In this study, secondary school levels of education were 0.054 times AOR (95% CI)=0.054, (0.01-0.30) more likely to have patients who developed psoriasis disease than their counterparts. Among clinical and behavioral related factors, patients who had a history of stress were 34.90 times the AOR (95% CI)=34.90 (8.27-147.30) more likely to develop psoriasis than those who did not have a history of stress. However, in this study, psoriasis disease was not statistically associated with age, upper respiratory infection, pregnancy history, cigarette smoking behavioral history or alcohol drinking behavioral history in a multivariable logistic regression model.

DISCUSSION

Psoriasis is a common chronic inflammatory and recurrent condition of the skin and these disease associations may be due to the combination of systemic inflammatory mediators generated in psoriasis and environmental influences (*i.e.*, stress, smoking, alcohol consumption). It affects 0.1%-11% of populations worldwide. The present study revealed that the prevalence of psoriasis was 6.0% based on typical clinical features and sites among patients in St. Paul's Hospital Millennium Medical College. In addition, educational status and clinical and behavioral-related factors were found to be independent predictors for psoriasis. This study found a slightly higher prevalence of psoriasis disease than studies conducted in Spain (5.1%) and Mekele (5.4%). However, the result of this study is lower than the study in Malaysia (9.5%). Likewise, the prevalence of psoriasis in this study was still higher than that in the studies conducted in 0.59 China, 1.18% Japan, 0.23 Taiwan, 2.3% India, 0.8% Nigeria, 0.4% Ghana and 3.15% Kenya. The difference may be due to geographical differences, the age group considered and the use of different diagnostic criteria, study periods and seasons. The possible reason for the higher magnitude compared to studies conducted in Ethiopia could be the study setting since the study was performed at St. Paul's Hospital Millennium Medical College is the referral hospital providing dermatologic services to patients in the capital city of Ethiopia [19].

The sociodemographic variation might have contributed to the discrepancy with that of the different study findings. In this study, psoriasis was found to be more common in males, accounting for 60%, which is in agreement with studies conducted in General Hospital in Port-of Spain, Trinidad and Tobago males, Japan 65.8% males, India 63.57% and Mekele 62% males. On the other hand, a similar finding was not observed in a study conducted in 52% females in Egypt. This difference might be due to the differences in the age group considered and methodology between the studies. In a comparison of urban and rural residents, a higher prevalence of psoriasis among patients was found in urban residents (88%). This finding is consistent with a study performed in Norway and 71.4% in Mekele. In this study, most of the cases of psoriasis

were in the age group of 30-40 years (60.0%). Similar to studies conducted in Egypt, the mean age of onset was 31 years and in Mekele research, the mean age of onset was 35 years (71%), but not similar to the Malaysia study, which is the onset of disease age group of 40-60 years. The Taiwan study reported that 50% of psoriasis patients were aged 70 years and older. The possible reason for the difference between Malaysia and Taiwan might be due to delays in treatment. Regarding factors associated with the development of psoriasis disease, only educational status was independently associated with the development of psoriasis from sociodemographic factors when added to the multivariable analysis model. Secondary school respondents were 0.054 times more likely to have psoriasis than primary and diploma and above level of education respondents. This result is consistent with a study performed by Mekele. This might be related to a lack of awareness of the disease trigger factor as well as perceptions of delays in treatment.

Moreover, based on typical clinical features in this study, almost all psoriasis-diagnosed patients commonly presented with erythematous plaque/papule with supporter silvery scaly lesions, which was found in 100% of patients. This finding is similar to studies performed in Pakistan. According to the clinical type of psoriasis, in this study, most psoriasis patients were diagnosed with chronic plaque psoriasis, which was found in 68.0% of patients. This result is consistent with studies performed in Korea that reported plaque psoriasis rates of 83.8%, 72.14% in India and 88.1% in Nigeria. The sites highly affected by psoriasis lesions were mostly found on the extensor surface of the extremities (48.0%) and were also found in 24.0% of the scalp, 20.0% of the trunk and 8.0% of the palm and sole surface areas. This finding is in agreement with the studies performed in Malaysia and Mekele. On the other hand, family history of psoriasis if one and both parents are affected is 14% and 41%, respectively, while in this study, it was 21% from psoriatic cases, which is in agreement with the study conducted 28% in China, not agree with the studies 13.8% in Nigeria, 15% in India and 9.5% in Mekele. The variation could be due to control of confounding effects.

In addition, clinical and behavioral related factors and stress exacerbation history showed statistically significant associations with the development of psoriasis in the multivariable analysis model. Patients who had a stressful history had 34.90 higher odds of developing psoriasis than those who were free of a stressful situation history. This result is consistent with studies conducted in an Italian case-control study that illustrated that psoriasis patients were more likely to experience a stressful situation that preceded the onset and exacerbation of the disease compared to patients with other skin diseases and was the same as that reported in cross-sectional studies in Pakistan and India.

All of these studies reported that stressful situations were some independent predictors for the development of psoriasis. This implies that a stressful situation risks existing psoriasis disease in patients. Furthermore, the present study found no association among sex, marital status, occupational status and residency, family history of psoriasis, medication history, diabetes mellitus history or hypertension history; however, in other studies, variables such as marital status, history of diabetes mellitus and history of hypertension were significantly associated with psoriasis cases.

Strengths and limitations of the study

The study, while used in a hospital setting, suffers the usual limitation, as the sample was taken only from the hospital and the study findings may not be generalized to a strong cause effect relationship among the magnitude of psoriasis disease and its associated factors [20].

CONCLUSION

The study found that a magnitude of 6.01% of patients in the study population had psoriasis disease. In addition, educational status clinical and behavioral factors related to stressful situation event history were found to be independent predictors of the development of psoriasis disease among patients. Furthermore, the present study found no association among sex, marital status, occupational status, residency, family history of psoriasis, medication history, diabetes mellitus history and hypertension history.

ETHICAL CONSIDERATION

Ethical approval was obtained from the department and SPHMMC Research Ethics Committee (REC). The study was conducted in St. Paul's Hospital after obtaining permission from St. Paul's hospital Ethics Review Committee. Verbal consent was obtained from patients to maintain confidentiality, and parental consent and assets for the study subjects were obtained. No personal identifiers were used in the data collection format.

RECOMMENDATION

Based on the results of the study, the following recommendations were made. For the Ministry of Health the Ethiopian Ministry of Health should give great attention to strengthening national skin disease prevention and control services for creating awareness, prevention and treatment of psoriasis at the institutional and community household levels, such as developing primary health care management strategies and short courses on psoriasis for health extension workers to improve knowledge biases on psoriasis and to provide evidence based health education to communities. To dermatologists and clinicians educate patients to consult health professionals when they feel lesion and do not neglect the disease. To provide collaborative emotional and psychological support to patients to decrease stress for researchers, further research on psoriasis must be performed to obtain a clear picture at the regional and national levels. In addition, it is better to conduct a prospective cohort study that is undertaken to characterize the association between clinical and behavioral related factors and psoriasis.

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STATEMENT OF DECLARATION

There's no declaration for the competency interest.

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