
Psoriasis at Ayder referral hospital among patients attending dermatology clinic, Mekelle, north Ethiopia

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Abstract: Background: Psoriasis is a chronic recurrent inflammatory skin condition. The prevalence of psoriasis varies in different population from 0.1% to 11%. It can classify in to type one (< 40 yrs) and type two (≥ 40 yrs). And also classified into four major categories; chronic plaque psoriasis, guttate psoriasis, pustular psoriasis and erythroderma. The objective of this study was to assess magnitude and factors associated with psoriasis. Methods: A cross-sectional study design and convenient sampling technique was implemented at Ayder referral hospital dermatologic unit until sample size (422) was fulfilled. Data was entered and analyzed by SPSS version 16.0. Descriptive statistics and logistic regression analysis was done. The magnitude of psoriasis was 5.4% where majorities (81%) of psoriasis cases were chronic plaque. Multiple site involvement (42.9%) (arms, trunk and leg) were the main characteristics. Marital status (widowed/divorced) (AOR= 7.75, 95%CI (1.58, 37.98)) and complaining joint pain (AOR=7.66, 95%CI (2.24, 26.17)) were significantly associated with psoriasis. Conclusion: The magnitude of psoriasis in ARH was relatively higher. Having history of joint pain and being divorced/ widowed were significantly associated with occurrence of psoriasis. Therefore, early diagnosis and treatment of joint pain, minimizing social stressor conditions such as divorce and providing emotional and psychological support were recommended.

Keywords: Psoriasis, Ayder Referral Hospital, Dermatologic Clinic

1. Introduction

Psoriasis is a chronic inflammatory and recurrent condition of skin (1). The prevalence of psoriasis varies in different population from 0.1% to 11% according to published reports (2). Psoriasis is uncommon in West African countries such as Nigeria – 0.8% (3), Ghana – 0.4% (4), 3.15% Kenya (5). There are two different forms of psoriasis exist: type I psoriasis, with age onset of before 40 years, and type II, with age onset of after 40 years (2).

Study conducted in Taiwan showed that (prevalence=0.235%; mean age=46.4 \pm 18.6; male: female=1.6:1) and 17.5% of cases were sPsO type (34). Other study in Taiwan showed that prevalence of psoriasis was 0.23% for men and 0.16% for women, respectively. The prevalence of psoriasis increased more rapidly in male patients aged 30

years. (7).

Study done in Norway prevalence of was 1.4%, with no difference between males and females. Peak prevalence was observed in the age group 30. A higher prevalence of psoriasis among females was found in urban and higher prevalence in females. No difference in prevalence was found between various socio-economic groups (8). Other study at dermatology Clinic in a General Hospital in Port-of-Spain, Trinidad and Tobago, three hundred and seventy-nine cases (5.1% of the total cases) of psoriasis was 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 (9).

Population-based survey conducted in China at six cities, out of 17,345 subjects showed that 102 subjects (0.59%) were found to have psoriasis. The prevalence of psoriasis in males and females were 0.54% and 0.44% respectively. Psoriasis vulgaris accounts 97.06% and family history of psoriasis accounted (28.43%) (10). Community based study conducted at Japan showed that shows males (65.8%) and females (34.2%). The vast majority of cases (86.0%) had plaque-form of psoriasis vulgaris, and 812 cases (2.8%) were guttate psoriasis. Psoriatic erythroderma (0.8%), generalized pustular psoriasis (0.9%), and localized pustular psoriasis (0.5%) were rare (11). Also other Study conducted at dermatology clinic in Hospital Tengku Ampuan Rahimah, Klang Malaysia, and the prevalence of 9.5% was by psoriasis. In this study psoriasis was found to be more common in males' 11.6% (316/2613) than females 7.2% (215/2994). The most common affected sites were arms (53%) followed by legs (44%) and also it involve trunk (15.9%), genital region (12.4%), scalp (11.8%), eyebrows (6.8%) and face (2.4%) (12).

Study conducted in Egypt at Dermatology Clinic, Al-Hussein University Hospital shows 52.0% of the cases were females and 44% of case occur 25-45 years followed by 37.0% (<25 yrs) and 19.0% >45 years respectively. The average age of onset was 31 years (13). In other hand since there is limited number of literatures in context of study area. So this study would give base line information about magnitude and factors associated with psoriasis for health professionals and those who are interested in carrying out further research.

2. Methodology

2.1. Study Design and Period

Institution based cross-sectional study was conducted at Ayder Referral Hospital, Mekelle from July 1 to August 1 2014 about a month using quantitative data collection method.

2.2. Study Area

Mekele is the capital city of Tigray regional state. It is located 730 km north of Addis Ababa with a total estimated population of 215,914, of whom 104,925 are men and 110,989 women. The two largest ethnic groups are Tigre (96.2%), and Amhara (2.26%) (14).

Ayder referral hospital is a referral and teaching governmental hospitals under the ministry of health. It serves up to 8 million populations in its catchment areas of the Tigray, Afar and South-eastern parts of the Amhara Regional States. It provides a broad range of medical services to both in and out patients of all age groups. As such, the hospital can be designated as the most advanced medical facility, by all accounts, in the Northern part of the country and that it stands as the second largest hospital in the nation. It has 500 inpatient beds in four major departments and other specialty units. It is also used as a teaching hospital for the College of Health Sciences, Mekelle University (15)

2.3. Population

2.3.1. Source Population

All Clients attending dermatologic clinic at Ayder Referral Hospital.

2.3.2. Study Population

All dermatologic patients at dermatology Clinic in Ayder Referral Hospital during Study period.

2.3.3. Sample Population

All dermatologic patients at dermatology Clinic in Ayder Referral Hospital during Study period.

Inclusion and exclusion criteria

All clients who visited dermatologic unit, Ayder Referral Hospital during the

Study period except children less than ten (10) years old.

Sample size determination and Sampling technique

2.4 Sample Size

The sample size for this particular study was calculated using formula for a single population proportion considering the following assumptions: A 95% confidence level, margin of error (0.05) and assume 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% confidence level which equals to 1.96 (z value at $\alpha=0.05$)

D The margin of error taken as 0.05

Therefore, the formula yielded 384 sample size and adding 10% (38 clients) for non-respondent the total minimum larger sample size is 422.

2.4.1. Sampling Technique

A convenience sampling method was used. All clients attending dermatologic units was interviewed and examined for psoriasis until sample size was fulfilled during data collection period.

2.5. Study Variables

Dependent variables: Psoriatic disease

Independent variables: Age, Sex, Marital status, residence, occupation, educational status, ethnicity, religion and average monthly income, family history of psoriasis, obesity, smoking, HIV co-infection, DM, alcohol consumption and URTI.

2.6. Data Quality Control

Data collection tools and procedure: Data was collected using structured questionnaire which were adopted from

different literatures based on objectives of the study. The data was collected by three MSc tropical dermatology students. At the end of the day principal investigator was checked daily activity of data regarding the completion of the questionnaires, clarity of responses and proper coding of the respondents.

Data management and Analysis: The collected data was checked for completeness, range and logical sequence of responses. Data was entered in to SPSS version 16.0 software package for analysis. Binary logistic regression analysis was made to obtain odds ratio and the confidence interval of statistical associations. Those variables with P-value of less than or equal to 0.25 was selected for further analysis. The strength of statistical association was measured by adjusted odds ratios and 95% confidence intervals and Statistical significance was declared at ($P < 0.05$).

Operational Definitions: Psoriasis: A skin lesion which is presented with characteristic feature of well demarcation,

adherent silvery scaly and erythematous back ground on the skin or Diagnosed as psoriasis by dermatologist. Psoriatic nail change: Pits range from 0.5 to 2.0 mm in size, oil spots and salmon patches on the nail of psoriatic patients. Geographic tongue: asymptomatic erythematous patches with serpiginous borders on the tongue.

Ethical consideration: Ethical clearance was obtained from the ethical review committee of the CHS of Mekelle University and it was taken to Tigray Regional Health Bureau. Accordingly, permission letter was secured from medical directors at Ayder Referral Hospital. In addition all of the study participants were informed about the purpose of the study and oral/verbal consent was obtained.

3. Result

3.1. Socio-Demographic Characteristics

Table 1. Factors associated with psoriasis at Ayder Referral Hospital, OPD, and Aug 2014.

variables	Category	Psoriasis		COR(95%CI)	AOR(95%CI)
		Yes	No		
Joint pain	Yes	8	27	7.8(2.98,20.49)	7.66(2.3,26.17)*
	No	13	343	1.0	1.0
Alcohol use	Yes	6	44	2.96(1.09,8.08)	2.02(0.59,6.89)
	No	15	326	1.0	1.0
HIV status	Positive	4	20	3.5(1.04,11.76)	1.58(0.19,7.2)
	Not known	4	122	0.58(0.18,1.8)	0.74(0.22,2.54)
	Negative	13	228	1.0	1.0
Marital status	Divorced/widowed	7	17	9.4(2.94,30.04)*	7.75(1.58,37.98)*
	Not married	7	193	0.83(.28,2.41)	1.4(0.41,4.81)
	Married	7	167	1.0	1.0
Age	<40	15	326	1.0	1.0
	≥40	6	44	2.96(1.09,8.04)*	1.34(0.30,6.02)
Occupation	Unemployed	4	27	2.98(0.98,9.5)	1.13(0.26,9.4)
	Employed	17	343	1.0	1.0

COR= Crude odds ratio, AOR= Adjusted odds ratio, * significantly associated

From the total of 422 identified dermatologic cases at dermatologic OPD, 391 were included in the analysis making the response rate of 92.64%. The mean (\pm SD) age of the respondent was 27.5 (\pm 12.5) years. One hundred ninety seven (50.4%) were females while 353 (90.3%) of the respondents were orthodox by religion. The largest ethnic group was Tigrie 362 (92.6%). Concerning the educational status of patient, 83.6% had attended formal school out of which 33.8 % had accomplished above twelve. Nearly half of patients were not married; students and government employee account 32.2% and 24.6% respectively. Nearly two third (71.4%) of them were urban by place of residence. Out of the total Study subjects (39.9%) had no income and 33.2 % of them earn an average monthly income of greater than or equal to 1200 ETB (Table: 1).

3.2. Clinical Characteristics of Psoriasis

Out of the total study participants, 21 (5.4%) of the patient were psoriatic (male; 61.9% Vs females; 38.1%). The mean (\pm SD) age of the psoriatic patient was 35.4(\pm 14.6) years. Also the duration of lesion less than five years accounts 61.9 %

which was similar to the lesion recurrent. Pruritus of the lesion was 85.7 % out of this moderate pruritus accounts 42.8% followed by sever pruritus 28.6%. Eighteen (85.7%) from total of psoriatic patient had erythematous back ground with 95.2% whitish/silvery scales. Additional physical findings presented with psoriasis such as nail pitting, geographic tongue, and salmon patch which accounts 52.9%, 42.9% & 19% respectively. Nearly four fifth (81%) of psoriasis clinical type was chronic plaque followed by ertheroderma 9.5%. Mostly (42.9%) involved sites were multiple site, palm and sole 23.8%. In addition less than 10% body surface was accounts 47.6%. Above half (52.4%) of psoriatic patient didn't know aggravating factors but seasonal variation contributes to 28.6%. Two third of patient were on follow up and the treatment modality was topical and systemic 42.9% and 23.8% respectively. Four of them had other medical problem with three of them on other medication.

3.3. Clinical and Behavioral Related Factors

Out of study subject 2(.5%) of them had family related psoriasis. Joint pain accounts nearly one tenth 35 (9%), while

common cold like symptom accounts 16(4.1%). And alcohol drinkers, cigarette smokers, known HIV and known DM were 50 (12.8%), 9 (2.3%), 25 (2.4%), and 9 (2.35) respectively. More than half 234 (59.95) of study participants had body mass index of less than twenty.

3.4. Factors Related to Psoriasis

The bivariate logistic regression shows that among the socio-demographic characteristics age and marital status were significantly associated with psoriasis; in which age of 40 years or older and divorced or widowed were risk factors for psoriasis. Also from clinical and behavioral factors those who have joint pain, alcohol drinkers and known HIV positives were risk factors for psoriasis

3.5. Multivariate Analysis

To identify factors associated with psoriasis, multivariable logistic regression analysis was carried out using variables in the binary logistic regression with a $p\text{-value} \leq 0.25$. Therefore, the multivariable logistic regression analysis, marital status and joint pain were significantly associated with psoriasis. Hence, those who were divorced/widowed were about 8 times more likely to develop psoriasis than married people (AOR= 7.75, 95%CI (1.58, 37.98)). In addition those who had joint pain were about eight times more likely to develop psoriasis than those who had no joint pain (AOR=7.66, 95%CI (2.24, 26.17)) (Table: 1)

4. Discussion

Psoriasis is a global problem; its magnitude varies worldwide from 0.24% at Tiwan (6), 0.4% at Ghana (4), 0.59 at china (10), 0.8% at Nigeria (3), 3.1% at Kenya (5), 5.1% at Trinidad and Tobago (9) with 9.5% at Malaysia (12). Similar research was done at Black lion hospital, Ethiopia reported that prevalence of psoriasis accounts 2.25 % (16), also in this study the prevalence was determined to be 5.4% which was higher than Tiwan, Ghana, Nigeria ,china, Kenya and Black lion studies but it was similar to Trinidad and Tobago finding. Even though it was lower than the Malaysian study. The possible reasons could be that lower prevalence of researches was done at community level other than Black Lion study. The socio-demographic variation might have contributed for the discrepancy with that of the Black lion finding. There was a difference in study design with that of Malaysian; retrospective study design was conducted for three years in Malaysian study while in this study cross-sectional study design was implemented. Regarding to clinical characteristics of psoriasis a study conducted at Egypt reported that the mean age of onset was 31 years (13); whereas the Malaysian research found out that most of the case of psoriasis lay in the age group of 40-60 years (12). Also in this study the mean age of onset was 35 years which almost similar to that of Egypt. While more than two-third (71%) of the cases were less than 40 years old unlike Malaysian finding. It might be the delay to treatment

at Malaysia for the difference. On the other hand studies done at Trinidad and Tobago and at Japan showed that more than half of the psoriatic cases were males (9, 11). But another study done at Egypt reported that 52 % cases were females (13). In this study males accounted 62% which is similar to the Japan and Trinidad and Tobago findings unlike Egypt study. Concerning comparison between urban and rural areas higher prevalence was found in urban areas at Norway (8) which is similar to this study by which three fourth of psoriatic cases were from urban places.

As regards family history of psoriasis, it is 14% and 41% if one and both parent/s are affected respectively (2). Community based study conducted at China reported that family history of psoriasis accounted 28% (10), but in this study it was 9.5 % from psoriatic cases. The variation could be due to a difference in study design. There are different clinical types of psoriasis, from these types psoriasis vulgaris was the commonest type at China and Japan (10, 11) which is similar to this study which accounted 81%. Concerning the degree of psoriasis, sever type was found in 17.5% and 26% of the cases at Taiwan and Egypt respectively (6, 13); while in this study it was 28.6% which relatively higher than the former studies, the possible reasons might be low level of awareness about the disease, poor adherence and delay in treatment. The sites highly affected by psoriasis include arms, legs and trunk in Malaysian study (12); in similar fashion multiple sites (arms, legs and trunk (43%)) followed by palm and sole (24%) were sites affected in current study.

Marital status was significantly associated with psoriasis; thus divorced and widowed people were nearly eight times more likely to develop psoriasis than married people(AOR=7.75, 95%CI(1.58, 37.98)). This might be related to psychological stress among divorced and widowed individuals. The relation of rheumatoid arthritis and psoriasis is the erosive inflammatory arthritis that is at the root of the cause for both conditions. They also share a gene called Runx1 which is a protein that acts as a transcription factor. When Runx1 changes; it contributes to autoimmune disorders like psoriatic arthritis and rheumatoid arthritis (17). Beside above, joint pain was other significantly associated with psoriasis, which were those people who had joint pain were about eight time at risk of developing psoriasis than those who had no joint pain (AOR=7.66, 95%CI (2.24, 26.17)). The possible reason might be joints are targets of immune attack so that one of the possible pathogenesis of psoriasis is immunology.

5. Conclusion and Recommendation

5.1. Conclusion

The magnitude of psoriasis at Ayder Referral Hospital was found to be attention seeking. Fortunately, this study has assessed the magnitudes of eczema, fungal infection and other dermatologic conditions which have found to be more prevalent. Even if different researches have reported that age, income and other socio-economic status and environmental

condition were factors for psoriasis, in this study socio-demographic (marital status), clinical (joint pain) were identified factor of the occurrence of psoriasis.

5.2. Recommendation

- To regional health bureau and stakeholder
- Should strengthen its attention for dermatologic diseases control while designing and implementing health programs and strategies
- To dermatologists and clinicians
- Early diagnosis and treatment of joint pain should be emphasized
- Educate the patients to consult the health professionals when they feel joint pain
- Should give emphasis to treat and prevent eczema and fungal infection
- To the community and community leaders
- Minimizing the chance of divorce and strengthening marital life should be enhanced
- Provide emotional and psychological support to divorced and widowed individuals to decrease stress
- To researcher
- To assess the factors associated with psoriasis using stronger study design

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