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Original Article

Prevalence of psoriasis in Bangladesh: A community based survey

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Abstract

Background Psoriasis is a global disease in its occurrence and diverse in its clinical characteristics.

Aim The prevalence of psoriasis in Bangladesh is unknown with lack of local epidemiological data and in most of studies on psoriasis data from western countries are used.

Methods This population-based cross sectional survey was conducted from March 2017 to February 2018. A total of 15,000 individuals were enrolled from 500 randomly selected households from six sub-districts (upazila) of Bangladesh. A psoriasis screening tool was used for initial diagnosis and confirmed by consultant dermatologists and then point prevalence of psoriasis was calculated.

Results The point prevalence of all types of psoriasis was 0.7% where plaque type was common variant (81%). The most common presenting symptoms were itching (68%), burning (27%) and joint pain (18%). Seasonal change, stressful life event, throat sore and drugs were found common aggravating factors for psoriasis.

Conclusion Psoriasis is fairly common in Bangladesh and comparable to the findings of other Asian countries.

Key words
Psoriasis, prevalence, epidemiology, Bangladesh.

Introduction

Globally the burden of chronic non-communicable diseases is increasing in the recent years.[1-2] Psoriasis is such a lifelong, disfiguring and crippling multisystem inflammatory disease mainly affecting skin and joints.[3-5] The exact cause and mechanism of the disease is yet to be explored but there are strong evidence of its genetic, autoimmune and environmental backgrounds.[6-7] It is a diverse disease regarding its prevalence, disease onset, clinical presentation, severity, complication and therapeutic response.[8-9] It is characterized by well demarcated indurated, red, scaly plaques that may be limited or widespread in extent with significant impact on daily life.[8-9] Regardless of ethnic and geographical origin, psoriasis affects individuals of all age and sex.[10] Worldwide the prevalence of psoriasis is widely variable ranging from 0.09% and 11.4%.[11-14] Highest prevalence of psoriasis was found among Nordic population.[15] In USA prevalence among black population is 1.3% and white population is 2.5%.[16] The prevalence of psoriasis is low in

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certain ethnic groups in Asia.[17-19] It may be absent in aboriginal Australians, Indians from South America.[20-21] In Indian subcontinent most of epidemiologic studies are hospital based and population based prevalence study is scarce.[22-23] Even in Bangladesh most of the studies on psoriasis are hospital based and previously no population based epidemiological study has been conducted to see its prevalence.[24-26]

Methodology

The study was approved by the Institutional review board (IRB) of Bangabandhu Sheikh Mujib Medical University (BSMMU) (*BSMMU/2016/12355; Date: 14-12-2016*) and received BSMMU research grant. It was a population based epidemiological survey conducted over a period from 1/3/2017 to 28/2/2018 over all inhabitants of selected villages and municipal areas of six Upozilas (Daudkandi, Brahmanbaria, Mithamon, Meherpur, Madhabpur, Sirajdikhan). The study was designed to conduct a nationally representative household survey to measure the prevalence of psoriasis in Bangladesh. The sampling technique considered was a multistage stratified cluster sampling. Sampling frame was based on the Population Census 2001 of Bangladesh conducted by Bangladesh Bureau of Statistics (BBS).[27] The population coverage of this census was around 95.5%. At that time Bangladesh was divided into six administrative divisions, namely Barisal, Chittagong, Dhaka, Khulna, Rajshahi, and Sylhet. Each division is divided into several districts (Zilla) and each district is divided into sub-districts (Upazilla). Each sub-district is divided into several 'Mouza' and 'Mohalla', the smallest administrative unit based on revenue records for both rural and urban areas respectively. These Mouza and Mohalla were primary sampling units (PSU). According to the population census 2001, the sampling frame comprised of 64,407 PSUs (mouzas and mohallas) in Bangladesh (GATS Bangladesh Report 2009).[28] Here secondary sampling units (SSUs) were the enumeration areas (EA's) as defined in the Bangladesh Agriculture Census-2008. EA's construction was based on 200 household units in "mouzas" and 300 household units in each "mohallas". From every sampled PSU (mouza and mohalla) one SSU (EA) was selected using simple random sampling (SRS). Household selection in the third stage is an equal probability systematic selection with 20 households per SSU using fractional interval techniques. From each household (HH) three persons were taken by probability sampling method. According to the method suggested by Bennett et al (1991) here the cluster (PSU) was 250 (p=.5, design effect 2, precision 2% and number of observation (HH) per cluster=20).[29] To get the design effect the number of observation per cluster was 20 and roh (intra-cluster correlation coefficient) was 0.5. [In Bangladesh Multiple indicator cluster survey 2012-13, 20 households [HH] were taken from each cluster (PSU)]. As here one EA was selected, i.e. SSU from each PSU, there were 250 SSUs finally. From these SSUs, 125 from urban areas and 125 from rural areas were taken. So, the sample size was 250*20=5000 Household. Here three persons from each of selected 5000 households were included and total sample was 15000. After taking written and verbal consent every selected person was examined for psoriasis initially by a psoriasis screening tool then was confirmed by dermatologist and the point prevalence was calculated.[30]

Results

Out of 15000 respondents of six upazilas 107 were diagnosed clinically and confirmed histopathologically as psoriasis; the point prevalence was 0.7% **(Table 1)**. Mean age was 37±2.7 (2-71) years, 17.8% belonged to the age

Table 1 Distribution responders according different Upazailas (n=15000)

Upazila	*Surveyed population*	*Confirmed case of psoriasis*	*Prevalence (%)*
Daudkandi (Comilla)	3083	17	0.6
Mithamain (Kishorganj)	2879	19	0.7
Meherpur	1800	11	0.6
Brahmanbaria	2556	28	1.1
Madhabpur (Habiganj)	2664	17	0.6
Sirajdikhan (Munshigonj)	2018	15	0.7
Total	15000	107	0.7

Table 2 Characteristics of patients of psoriasis (n=107)

Characteristics	*Frequency*
Age (years)	
<18	17.8%
18-40	48.5%
>40	33.7%
Mean (Range) (years)	37±2.7 (2-71)
Male	55.1%
Female	44.9%
Male:Female:	1.2:1
Affected first degree relatives	8.4%
Smoking	47.6%
Treatment history	
New cases	64.5%
Treated	35.5%

*Multiple responses

Table 3 Types of psoriasis (n=107).

Type	*Frequency*
Plaque psoriasis	81.3%
Guttate psoriasis	4.7%
Flexural psoriasis	3.4%
Sebo-psoriasis	2.8%
Pustular psoriasis	2.8%
Linear psoriasis	2.8%
Only nail psoriasis	1.9%
Erythrodermic psoriasis	0.9%

group 0-18 years, 48.5% age group 18-40 years and 33.7% above age 40 years. Family association was found in 8.4% and 37.6% patients were smokers **(Table 2).** New cases of psoriasis were found in 64.5% **(Table 2)**. Frequency of different type of psoriasis was plaque type 81.3%, guttate 4.7%, flexural 3.4%,

Table 4 Distribution sites of involvement and severity of disease

Site	*Percentage*
Single site	42.1%
Multiple site	57.9%
Trunk	67.3%
Extremity	52.3%
Scalp	34.6%
Palmoplantar	14.9%
Joint	10.3%
Nail	4.7%
Face only	2.8%
Lips	2.8%
Post auricular region	5.9%
Diaper area	4.7%
Severity	
Mild (<10% BSA)**	47.1%
Moderate (10-30% BSA)	41.8%
Severe (>30% BSA)	12.1%

*Multiple responses,**BSA: Body surface area

sebo-psoriasis 2.8%, pustular 2.8%, linear 2.8%, only nail psoriasis 1.9% and erythrodermic 0.9% **(Table 3)**.

Single site was involved in 42.1% and multiple sites in 57.9% cases. Sites of involvement were trunk 67.3%, extremity 52.3%, scalp 34.6%, palmo-plantar 14.9%, joint 10.3%, nail 4.7%, face only 2.8%, lips 2.8%, post auricular region 5.9% and diaper area 4.7% **(Table 4)**. Severity of the disease was mild (<10% BSA) in 57.1% cases, moderate (10-30%) in 31.8% and severe (>30%) in 12.1% cases **(Table 4)**.

Discussion

In this population based survey, the prevalence of psoriasis in Bangladesh was 0.7%. All previous Bangladeshi studies and most of Indian studies on psoriasis are hospital based and no population based study was conducted.[24-26,31-32] The prevalence of psoriasis in different geographical areas widely differs as well as its presentation, type, severity, treatment pattern which may be due to variable environment, genetics, nutrition and access to health etc.[4] Psoriasis is comparatively less frequent among the phototype VI (black population), followed

by the intermediate phototypes (Asian) and finally mostly distributed within the phototype I and II (Caucasian population which is most concerned).[33-34] Highest prevalence of psoriasis is in Scandinavian countries, like Norway (11.4%) and 11.8% in arctic Kasach'ye.[15,35] There are some communities who are totally spared of psoriasis like Australian aborigines (0.0%), native Americans (0.0%) and Samoya Island (0.0%).[20-21,35] Regarding age of onset there are two point of higher rate of occurrence of psoriasis, one is before 40 (early onset) and another is after 40 (late onset).[37-38] In the current study 66.3% were early onset and 33.7% late onset. Familial clustering of psoriasis is well-established, up to 30% of the first degree relatives can be affected.[39-40] Twin studies revealed up to 73% of monozygotic and 20% of dizygotic twins can inherit psoriasis.[40-43] In the current survey 8.4% of the patients had a history of affected first degree relatives. The occurrence of psoriasis among male and female genders are considered to be equal.[44-45] Male preponderance of psoriasis was found in some studies.[46-47] Here male female ratio among our patients was 1.2:1.

In the current study about 10% of psoriasis patients had joint involvement. The prevalence of PsA among patients with psoriasis is around 30% (varying from 6% to 42%).[47]

It is higher in Europe and the USA. However, in Asian countries, the prevalence of PsA among patients with psoriasis has been estimated to be less than 10%.[48-49] In the current study majority 53.9% of the patients were moderate to severe psoriasis which is consistent with previous Asian study.[50]

Smoking is associated with psoriasis initiation, adverse disease course and therapeutic response.[51-52] In the current series 47.1% were smokers and none was alcoholics other physical and behavioral factors are considered to aggravate or incite psoriasis including trauma, sun burn, infection, obesity, psychiatric comorbidities and some drugs.[53-54] Reported aggravating factors in this study were seasonal change 41.1% **(w**inter exacerbation 26.2%and **s**ummer or rainy season exacerbation 17.8%**),** **s**tress 30.8%**,** throat sore 15.9% and drug 8.4%. In previous Asian study three commonest aggravating issues are seasonal variation (60.2%), mental stress (34.5%), and sore throat (27.4%) which is consistent with the current study.[50]

Itching is the commonest complain of patients with psoriasis involving about 70% to 90% of patients with plaque type psoriasis. In the current study about 68.4% had history of itching which is consistent with previous studies.[55-56]

Chronic plaque psoriasis and its variants was the commonest type of psoriasis, like other worldwide studies.[8] A previous Indian study showed 93% patients were of chronic plaque psoriasis. [57] Guttate is the next common type with a prevalence of not more than thirty percent.[58-59] Erythrodermic, sebopsoriasis, flexural, pustular, linear and only nail psoriasis were less common. Trunk, limbs and scalp are the common site of involvement which is consistent with the current study.[8] Majority (53.9%) of the patients had moderate to severe psoriasis which is also consistent with previous a Asian study.[50]

Conclusion

Epidemiological and clinical data of this study can be used for designing future studies on patients of psoriasis of Bangladesh.

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