Psoriasis: Targets and Therapy

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ORIGINAL RESEARCH

# Psoriasis: Prevalence, Clinical Variants and Quality of Life, Among Patients Attending the Skin Clinic at Mbarara Regional Referral Hospital, Uganda

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**Introduction:** Psoriasis is a chronic, relapsing inflammatory skin disorder that causes a detrimental physical and psychological impact on people living with the disease. However, little is known about its current prevalence, clinical variants, and quality of life among patients in Uganda.

**Objective:** The purpose of this study was to determine the prevalence of psoriasis, clinical variants, and quality of life (QoL) among patients attending Skin Clinic, Mbarara Regional Referral Hospital (MRRH), in western Uganda.

**Methods:** A cross-sectional study design and consecutive sampling were used. It was conducted between January and March 2023 at the skin clinic, MRRH, with a sample size of 384. The patients were thoroughly examined to assess clinical variants, and Quality of Life was evaluated using the Dermatology Life Quality Index (DLQI). Data obtained was entered using Excel version 20 and analyzed using STATA version 12.0 and GraphPad Prism 9.00. Descriptive statistics and comparison analysis (students *t*-test and ANOVA) were done.

**Results:** The overall prevalence of psoriasis was 3.91%. Majority of cases (86.67%) had chronic plaque psoriasis, 60% had a severe disease, and 60% were between 4 and 40 years. Most affected sites were arms (60%) and back (60%) and shins (53.33%), and the least affected were nails and dorsal feet (6.67%). Psoriasis moderately reduces QoL, with an overall mean DLQI score of 8.95 ± 1.35. There was no significant difference between QoL and age or gender.

**Conclusion:** Prevalence of psoriasis at MRRH in western Uganda is 3.91%. Chronic plaque psoriasis was the most common variant (86.67%), and the disease moderately affects the quality of life.

**Keywords:** psoriasis, prevalence, clinical variants, quality of life, MRRH–Uganda

## Introduction

Psoriasis is a chronic, relapsing inflammatory skin disorder that characteristically presents with sharply demarcated, erythematous plaques of various sizes and shapes that are usually covered with dry, adherent silvery-white scales.[1] Psoriasis accounts for 1–3% of the world's population.[2] Its prevalence rates range between 0.09% and 11.43% in different locations worldwide.[3] The only data in archives about psoriasis in Uganda dates back to the 1970s, with a prevalence of 2.8%.[4]

The clinical variants of psoriasis include chronic plaque psoriasis, generalised pustular psoriasis, inverse psoriasis, guttate psoriasis, palmoplantar psoriasis, erythrodermic psoriasis, and nail/joint psoriasis.[5] This disease causes a considerable psychological effect and suffering to the patients to the extent that 10% contemplate suicide.[6]

Despite the fact that psoriasis is a commonly seen skin problem and has a significant effect on QoL, scanty data is available about this disease in Uganda. Therefore, this study aimed to determine the prevalence of psoriasis, clinical variants of psoriasis, and quality of life among patients attending the Skin Clinic, MRRH.

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# Patients and Methods

## Study Population

The National Council for Science and Technology (UNCST), the Institutional Research Ethics Committee (IREC) at MUST, and the Hospital Administration at MRRH approved the study protocol. The study also complies with the Declaration of Helsinki, 1964. It was a descriptive hospital-based cross-sectional study conducted on 384 patients who attended an outpatient skin clinic at MRRH from January to March 2023. The sample size was calculated using Kish Leslie, assuming 50% prevalence for maximum sample size.

All study participants were informed about the purpose of the study and signed a written informed consent form, and the parent or legal guardian of participants under 18 years of age provided informed consent. Patients below the age of 4 years, those who declined to participate, and those with other serious comorbidities that required medical attention were excluded, eg severe HIV infection and high output heart failure due to erythroderma. Otherwise, we included all patients who visited the skin clinic during the study period. The diagnosis of psoriasis was solely based on clinical presentations and confirmed by senior dermatologists.

## Study Data

Data on the demographics of study participants, clinical variants, and QoL was collected using a standardized questionnaire (Biodata, Physical examination and Dermatology Life Quality Index, DLQI). DLQI is a simplified and validated self-reported questionnaire used to measure how much a skin problem has affected the life of the patient over the previous 7 days. It consists of 10 questions covering six domains (symptoms and feelings, daily activities, leisure, work and school, personal relationships, and bothering with psoriasis treatment during the preceding one week). The score ranges from 0 to 30; the higher the score, the more the QoL is impaired.

## Statistical Analysis

Differences between dependent variables and some independent variables were compared using Student's *t*-test or ANOVA. Data was entered using Excel version 20 and analyzed with STATA software version 12.0 and GraphPad Prism 9.00. Missing and incomplete data were excluded from analysis. Two-tailed $p$-values $< 0.05$ were considered statistically significant.

# Results

## Characteristics of Study Participants

The detailed data on the characteristics of study participants are shown in Table 1. Mean age of presentation was 30.21 ± 0.78 years; the majority were females, 67.97%, and 80.47% were in the age range of 4–40 years. They were predominantly from Mbarara district (64.06%), and 63.02% were from urban areas. About occupation, 98.96% of our respondents worked from indoors. Out of the 384 study participants, 15 cases had psoriasis, giving an overall prevalence of psoriasis of 3.91%.

## Demographic Characteristics of the Psoriasis Patients

Table 2 shows demographic characteristics of 15 psoriasis patients. Their mean age was 39.93 ± 4.62 years; males were slightly more (53.33%) and were predominantly from urban areas (53.33%). Majority of patients (60%) were between 4 and 40 years and nearly three-fifth (66.67%) were working from outdoors. Regarding the family history of psoriasis, those with a positive history accounted for only 26.67%.

## Clinical Characteristics of Psoriasis Patients

Table 3 shows the clinical characteristics of psoriasis patients. Majority of cases (40%) had their initial age of onset in the first peak (20–30 years). Chronic plaque psoriasis was the most prevalent morphological clinical variant (86.67%). This was followed by guttate psoriasis and inverse psoriasis, accounting three-fifth of cases having severe psoriasis (>10% BSA), followed by moderate psoriasis (26.67%) and mild psoriasis by 13.33%.

**Table 1** Demographic Characteristics of the Study Participants

| Characteristic | n | % |
|---|---|---|
| **Mean age** | **30.21 ± 0.78** | |
| **Gender** | | |
| Male | 123 | 32.03 |
| Female | 261 | 67.97 |
| **Age Category** | | |
| <40 years | 309 | 80.47 |
| ≥40 years | 75 | 19.53 |
| **District** | | |
| Mbarara | 246 | 64.06 |
| Others | 138 | 35.94 |
| **Residence** | | |
| Urban | 242 | 63.02 |
| Village | 142 | 36.98 |
| **Occupation** | | |
| Indoor | 4 | 1.04 |
| Outdoor | 380 | 98.96 |
| **Presence of Psoriasis** | | |
| Yes | 15 | 3.91 |
| No | 369 | 96.09 |

**Notes**: %: percentage; n: sample size; <: less than; >: more than.

**Table 2** Demographic Characteristics of Psoriasis Patients

| Characteristic | n | % |
|---|---|---|
| **Age (in years)** | **39.93 ± 4.62** | |
| **Gender** | | |
| Male | 8 | 53.33 |
| Female | 7 | 46.67 |
| **Age Category** | | |
| <40 | 9 | 60.00 |
| ≥40 | 6 | 40.00 |
| **Residence** | | |
| Urban | 8 | 53.33 |
| Village | 7 | 46.67 |
| **Occupation** | | |
| Indoor | 5 | 33.33 |
| Outdoor | 10 | 66.67 |
| **Family History of Psoriasis** | | |
| No | 11 | 73.33 |
| Yes | 4 | 26.67 |

**Notes**: %: percentage; n: sample size; <: less than; >: more than.

## Location or Sites

Table 4 shows locations or sites. The most affected sites were the forearms and back (60%), followed by the chest (53.3%) and scalp (26.67%), and the least were the nails and dorsal feet (6.67%).

## Quality of Life of Psoriasis Patients According to the DLQI Scores

Table 5 illustrates QoL according to DLQI scores. The most affected domain was symptoms and feelings (3.00 ± 0.44), followed by Daily activities (2.06 ± 0.33), and the least affected was treatment (0.53 ± 0.19). The overall total mean DLQI score was 8.95 ± 1.35 (in moderate effect).

**Table 3** Clinical Characteristics of Psoriasis Patients

| Characteristics | n | % |
|---|---|---|
| **Initial Age of Onset** | | |
| <20 | 5 | 33.33 |
| 20–30 | 6 | 40.00 |
| 31–49 | 1 | 6.67 |
| 50–60 | 1 | 6.67 |
| Over 60 | 2 | 13.33 |
| **Duration of Psoriasis** | | |
| <5 | 8 | 53.33 |
| >5 | 7 | 46.67 |
| **Types of Psoriasis** | | |
| Chronic Plaque Psoriasis | 13 | 86.67 |
| Guttate psoriasis | 1 | 6.67 |
| Inverse Psoriasis | 1 | 6.67 |
| **Disease Severity** | | |
| Mild | 2 | 13.33 |
| Moderate | 4 | 26.67 |
| Severe | 9 | 60.00 |

**Notes**: %: percentage; n: sample size; <: less than; >: more than.

**Table 4** Skin Sites Affected by Psoriasis

| Affected Skin Area | n | % |
|---|---|---|
| Chest | 8 | 53.33 |
| Back | 9 | 60.00 |
| Forearms | 9 | 60.00 |
| Shins | 8 | 53.33 |
| Nails | 1 | 6.67 |
| Dorsal Feet | 1 | 6.67 |

**Table 5** Distribution of Psoriasis Patients According to Their Mean Score in Different Domains of Quality of Life

| Domains | Mean ± SD | Min | Max |
|---|---|---|---|
| Symptoms & Feelings | 3.00 ± 0.44 | 0 | 6 |
| Daily activities | 2.06 ± 0.33 | 0 | 6 |
| Leisure | 1.73 ± 0.47 | 0 | 6 |
| Work & School Performance | 0.47 ± 0.26 | 0 | 3 |
| Personal Relationship | 1.13 ± 0.48 | 0 | 6 |
| Treatment | 0.53 ± 0.19 | 0 | 3 |
| **Total DLQI Score** | **8.93 ± 1.35** | **0** | **30** |

Out of the 15 psoriasis patients, majority (66.67%) generally had a moderate to large effect on their quality of life, as shown in Table 5.

## Comparing the Difference in QoL and Severity of Psoriasis

Figure 1 shows the differences in QoL compared to different severity groups of psoriasis (ie, mild, moderate, and severe). There was a statistically significant difference in the mean DLQI scores across all groups (mild, moderate, and severe psoriasis), as demonstrated by a significant p-value, ie ($p = 0.009$).

Comparing the DLQI scores between mild and severe psoriasis, the difference in DLQI scores was statistically very significant ($p = 0.010$).

Further comparing the scores between mild and moderate, the difference in mean DQLI scores was statistically significant ($p = 0.02$). However, there was no statistically significant difference in mean DQLI scores between moderate and severe psoriasis ($p = 0.996$).

## Comparing the Difference in QoL and Age of Onset

Figure 2 shows the difference in QoL between the early onset of psoriasis, ie, <40 years, and late on psoriasis, ie, >40 years. There was no significant statistical difference in mean DLQI scores between early onset, ie, <40 years, and late onset, ie, >40 years ($p = 0.5884$). The cut off at age of 40 years was adopted from previous studies.[7]

## Comparing the Difference in QoL and Gender

Figure 3 shows the difference in QoL between females and males. There was no significant difference in mean DLQI scores between female gender and males ($p = 0.0564$).

## Clinical Presentation of Psoriasis According Disease Severity

Figure 4 shows clinical presentation of psoriasis according to disease severity. Severe psoriasis affects all the different anatomical locations. The back, chest and legs are severely affected as shown in the (Figure 4C, F and I), respectively.

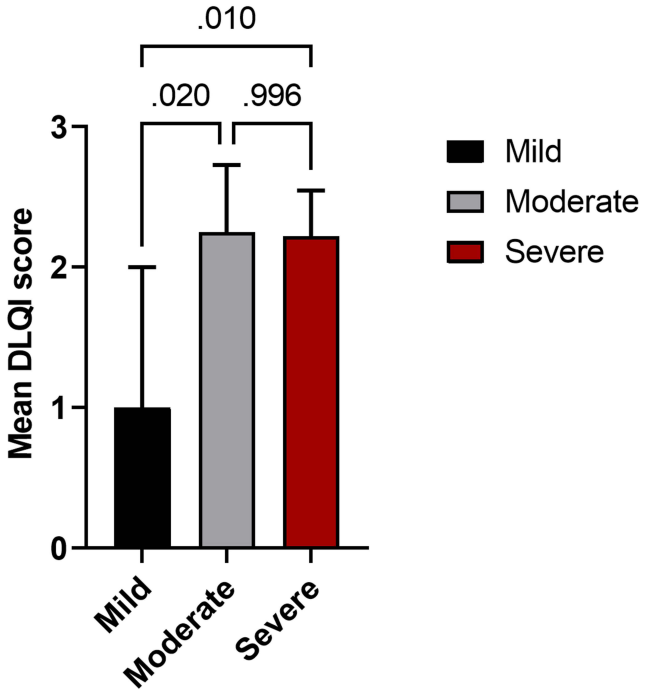


**Figure 1** Mean DLQI score and severity of psoriasis. Data were analyzed and plotted as mean ± SD by One way ANOVA.


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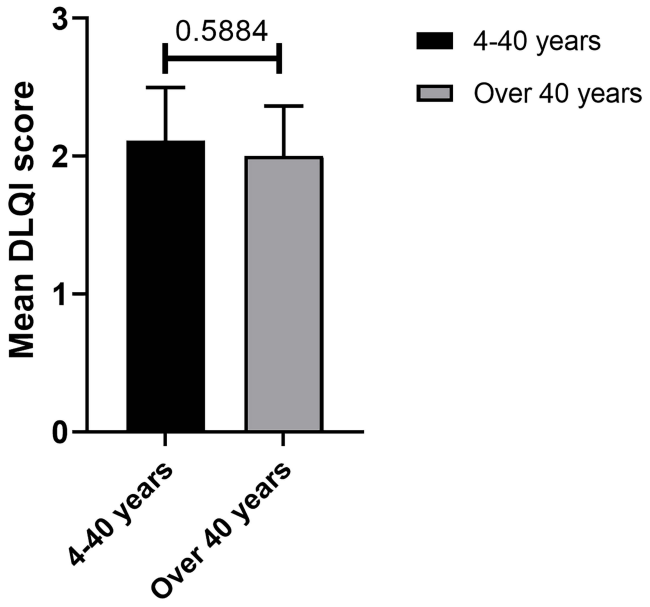


**Figure 2** Mean DLQI score and age of onset of psoriasis. Data were analyzed and plotted as mean ± SD by unpaired Student's t-test.

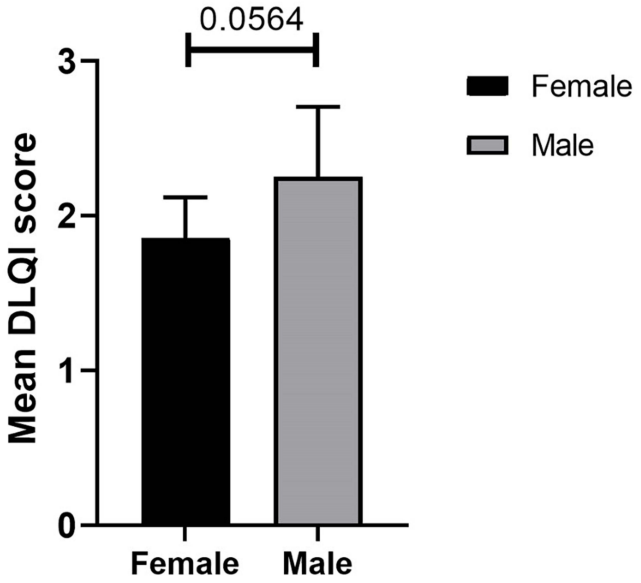


**Figure 3** QoL and sex of psoriasis patients. Data were analyzed and plotted as mean ± SD by Unpaired t-test (P = 0.0564; n.s., not significant).

## Discussion

In our study, prevalence of psoriasis was 3.91%. The results were comparable to a study done in Ethiopia, 4.0%,[8] and South Africa, 4%.[9] The similarity is probably due to similar ethnicity and environmental factors. Our prevalence was higher than in West Africa, where Ghana was 0.4%[10] and Nigeria 0.6%.[11] The discrepancy might be explained by variations in ethnicity (genetic) and environmental factors. In West Africa, the majority of the population is Nilotics, while in East and South Africa, there are predominantly Bantu-speaking ethnic groups.[12] In Tanzania—7.7%[13] might be due to a difference in the inclusion criteria, as they enrolled above 55 years. In addition, our prevalence is seemingly higher than the 1971 study done in Uganda.[4]

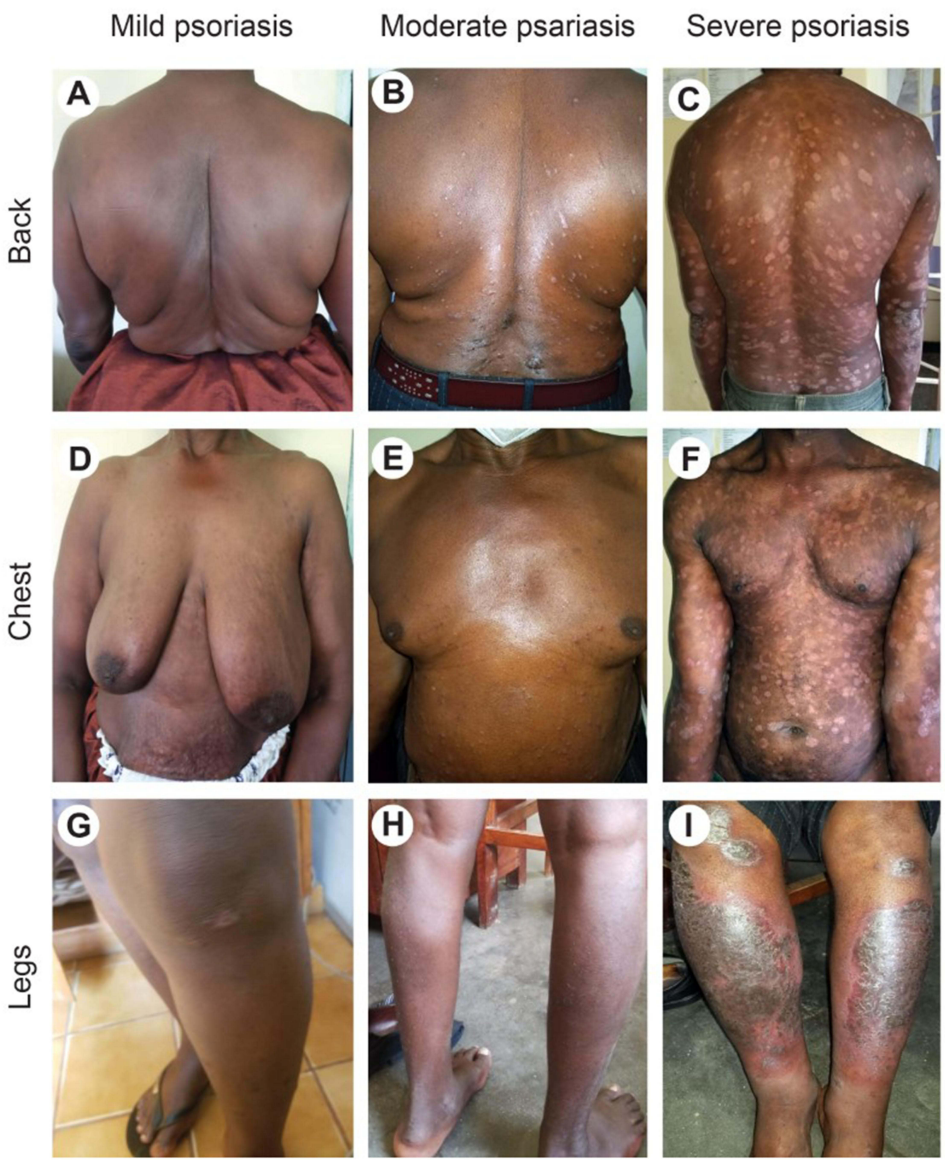


**Figure 4** Classification of Psoriasis according to disease severity. (**A, D** and **G**) Mild psoriasis, (**B, E** and **H**). Moderate psoriasis, and (**C, F** and **I**) severe chronic psoriasis of the back, chest, and extremities.

The discrepancy cannot be fully explained; however, a lot has happened since then, eg advent of HIV infection in the late 1980s, migrations, and intermarriages.

In contrast, Sweden (9.2%) and Norway (11.9%)[14] recorded a far higher prevalence. The difference is probably due to geographical variations, where the Scandinavians have a low UV light exposure to the tropics. UVB phototherapy is a therapeutic modality in management of psoriasis.[15]

The most common clinical variant was chronic plaque psoriasis (86.67%). This is consistent with studies in the US, 80%,[16] and Nigeria, 90%.[11] Probably, most people in both populations have similar frequencies of the HLA-Cw6 allele, which is associated with more extensive plaques.[17] By severity, severe psoriasis (>10% BSA) was the most prevalent variant (60%), and this was in line with a study in Nigeria, 44.1%[18] and a larger survey in China, 97.06%.[19] For West Africa, this may be explained by similar study settings and patient characteristics, eg, poor health-seeking behaviour. While for China, this may partly be due to a potential similarity in the disease genetics. Our result contradicted the US study (3.6%)[20] and the UK (12%)[21] Probably, due to better health-seeking behaviour and access to healthcare in the West


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compared to Africa. In Africa, poor health-seeking behaviour is mainly due to poor health infrastructure and a strong belief in traditional therapies.

By site, the most affected sites in our study were forearms (60%), back (60%), and shins (53.3%). The results were comparable to a study in Malaysia with arms, 53%, followed by the legs, 44%.[22] Similarly, in Nigeria, the abdomen (100%) and lower limbs were the most affected (75.7%).[11] The similarity is likely due to a similar distribution of HLA-Cw6 alleles, also associated with lesions on the extremities and the trunk. In contrast, a study in Taiwan showed that the scalp was the most affected compared to the extremities.[23] Differences may be due to environmental variations and genetic diversities, which probably cause different clinical presentations.

In terms of QoL, our Mean DLQI score was 8.93 ± 1.35 (Moderate Effect), which was comparable to studies in Malaysia, 8.50 ± 6.47,[24] India, 8.95 ± 8.48[25] and Ethiopia, 6.25.[26] Similar study designs (hospital-based cross-sectional studies) may explain this similarity. However, in a Chilean study, mean DLQI scores were higher at 14 compared to our scores.[27] The reason might be due to the fact that almost half of the participants had psoriasis in "conspicuous and psychologically sensitive areas" like the face, hands, and genitalia. In addition, the most affected domains were the symptoms and feelings followed by daily activities. The results were consistent with a study in Nigeria, where symptoms and feelings were most affected.[18] The 'unsightly' appearance of the psoriatic lesions makes patients feel embarrassment, shame, and low self-esteem and interrupts their daily activities. Generally, the majority of psoriasis patients (66.67%) had a "moderate to large effect" on their quality of life. This aligns with a study in Taiwan, where 61.1% had a "moderate to large effect".[23] India showed almost similar results (58.4%).[25]

The similarity might be due to similar disease characteristics, which probably affect quality of life in a similar way across the globe. More still, when we compared the difference between QoL and severity, there was a significant difference in mean DLQI scores across all groups (mild, moderate, and severe) ($p = 0.009$). The results were similar to a study in Poland[28] and an Egyptian study.[29]

Likely, the more severe the disease (by BSA), the unsightlier its appearance and the higher the scores. Our study found no difference between mean DQLI scores and age of onset. The results were inconsistent with a number of famous studies in India,[30] where <40 years had poor scores. In fact, young patients (adolescents) are at the climax of initiating their careers and social relationships and, thus, are expected to be severely affected. Therefore, finding no difference in mean DQLI scores and age of onset is a rare occurrence.

Lastly, our study still showed no significant difference in scores between males and females. The results align with a study in Madagascar, where gender and QoL were unrelated.[31] The reason could be because of the similarity in population characteristics and patient behaviour since both studies were done in an African setting. In contrast, several studies, eg, a German study[32] and the US, showed more females than males.[33] The reason is probably because women tend to be more concerned about their beauty and appearance than men.

## Limitations

The study was a hospital-based cross-sectional study with a small sample size, thus findings may not accurately represent the burden of psoriasis on the entire community. Children below 4 years were excluded due to the lack of a simplified tool to assess their quality of life (QoL). The DLQI tool used is based on self-reported questionnaires (with local language translations from English), thus a potential loophole for report or recall bias. Lastly, we were limited with funds, hence no biopsies were done to histologically confirm the psoriasis cases.

## Conclusions

The prevalence of psoriasis at a skin clinic in Mbarara Regional Referral Hospital in western Uganda is 3.91%. It presents a wide range of clinical variants, with chronic plaque psoriasis being the common variant by 86.67%. The study results suggested that psoriasis moderately affects patients' quality of life. There was no significant difference between age or gender with QoL.

## Recommendations

Owing to the above findings, we recommend multiple sites and a larger sample size or community-based studies to be done to get a clearer picture of the prevalence of psoriasis in Uganda. Public awareness campaigns to address the psychological impact of psoriasis in the community. Clinicians or healthcare workers should be sensitised to holistically manage both physical and psychological impact of psoriasis in patients. We finally argue authorities and health policy-makers to encourage more research on psoriasis, especially on disease genetics and molecular biology.

## Disclosure

This paper is based on the thesis of [Dr. LUBWAMA HAYIDAR]. Its abstract has been published on Mbarara University of Science and Technology (MUST) website, as a requirement for the Award of a Degree of Master of Medicine in Dermatology. No conflict of interest.

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