International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Lichen Planus: Health Related Quality of Life, Dermoscopic Features and Clinical Variants in Uganda

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ABSTRACT

Background: Lichen planus is a chronic, lichenoid inflammatory disorder affecting skin, mucous and appendages that can negatively impact patients' quality of life. The clinical variants and dermoscopic feature vary based on skin type and race. Such an understanding can ease the diagnosis of lichen planus among dark skinned people.

Aims and Objective: The goal of this study was to assess the quality of life and to describe the clinical variants and dermoscopic features among adult patients with lichen planus attending a Regional Referral Hospital skin clinic.

Methods: A cross-sectional study was conducted from January to June 2024. A questionnaire was used to collect patients' data, a standardized tool (DLQI) to assess the quality of life, dermoscopy for describing dermoscopic features and data analyzed using Stata version 17.0.

Results: We enrolled 52 adult patients, the median age was 34.5 IQR= 25 – 47. There was a significant relationship between itch $X^2(1, n = 52) = 17.5102$, $p<.001$), embarrassment $X^2(1, n = 52) = 9.5510$, $p<.002$) with patients' impaired quality of life. More patients had a very large effect on their quality of life (36.54%). The most common variants were classical (50%) and hypertrophic (23.08%). On dermoscopy 104 lesions were examined, (25.96%) of lesions had a violet, (22.11%) gray, (15.38%) gray-blue and (15.38%) gray-violet background. The pigmentary changes seen were mostly brown (69.23%). Wickham's striae patterns were reticulate (21.15%) and diffuse (14.42%).

Limitation: A single study site.

Conclusions: lichen planus exerts a very large effect on patient's quality of life. Itchy skin and a feeling of embarrassment significantly affected the quality of life. Classical and hypertrophic were the most common forms of lichen planus. The most lesions had violaceous or a grayish background, and had brown pigments with a reticulate and diffuse wickham's striae patterns. Routine screening of quality of life should be practiced on patients with lichen planus.

Keywords: Dermoscopy, Clinical variants, Lichen planus, Quality of life, Wickham's striae

INTRODUCTION

Lichen planus (LP) is a chronic idiopathic lichenoid inflammatory disorder affecting the skin, mucous membranes, and appendages [1] with an incidence of 0.22% to 1% in the global adult population[2]. Both sexes are equally affected, predominantly between the ages of 30 and 60[3]. Lichen planus presents in various forms depending on location and morphology, including classical, hypertrophic, actinic and other types in cutaneous tissue, and oral or vaginal lesions in mucosal tissue[4,5]. Clinically, LP is characterized by pruritus, flat-topped papules or plaques, violaceous color and polygonal shapes, often occurring on the wrists, forearms, extremities, sun-exposed areas, and trunks [6,7].

Histopathological investigation is the gold standard for diagnosis but is invasive. Dermoscopy offers a non-invasive alternative, allowing for quicker assessment by examining features like background color, scales, vascular and non-vascular structures, follicular organization, pigmentary change, and wickham's striae[8,9].

Lichen planus can significantly impact quality of life due to pruritus, which may cause embarrassment, and post-inflammatory hyperpigmentation leading to stress and anxiety [10,11]. Severe complications include squamous cell carcinoma in 0.5% to 5% of cases with oral-genital involvement, alopecia, and nail disfigurement[12].

A dearth of information on clinical variants, dermoscopic features, and quality of life impact of lichen planus documented in Uganda renders this study pertinent in attempting to address these gaps.

MATERIALS AND METHODS

Study design and site

The study was a hospital cross-sectional descriptive design, conducted at referral hospital skin clinic in Southwest Uganda, which is approximately 260 miles from Kampala, the country's capital. The hospital is an important public teaching hospital.

Study population

Adult patients that attended skin clinic during the study period of January to June 2024.

Target population

Adult patients with lichen planus that attended skin clinic during the study period.

Inclusion criteria

Adult patients with lichen planus.

Sampling Technique

Consecutive recruitment of study participants who attended the skin clinic and followed the study protocol throughout the study duration.

Ethics approval

Approval was sought from dermatology department, faculty research committee and research ethics committee at MUST with approval number (MUST-2023-1165). Request and approval from the Regional Referral Hospital to carry out the study at the facility was obtained. Full consent was obtained from the participants.

Study Procedure and Data collection

Standardized questionnaires were used to collect patient's characteristics', physical examinations detailing clinical characteristics, lesion distributions, locations, and variants of lichen planus and in cases of doubt, histopathology was done to confirm the diagnosis. A dermatological life quality index tool (DLQI) [13] was used to assess quality of life. A Dermlite 3Gen dermoscope with a Nikon D7100 camera

attached to it was used to describe dermoscopic features. Affected areas for photography were marked using a photo measuring label (©Delasco) and pictures taken using a Nikon D3100.

Management and Analysis of Data

Data was entered using Microsoft excel and analyzed using Stata software version 17.0. Both descriptive and inferential analysis was done and presented as means, median, frequencies and percentages and recorded in tables and charts.

RESULTS

Participants' characteristics

A total of 52 patients with lichen planus were interviewed and reviewed: 25 males and 27 females, giving a male-to-female ratio of 1:1. The age range of the patients was between 18 and 76 years old, with a median age of 34.5 IQR 25–47. Large proportion 18 fell in the age category of 21–30 years (Figure.1, Table 1)

Quality of life

The quality of life was affected in 49 participants in this study, concerning the degrees of impairment; having a very large effect was more observed in 19 participants, while extremely large effect was the least observed in 5 participants (Table 2).

Table 3 illustrates that the most affected domains were symptoms and feelings, with a mean DLQI score of 3.63 ± 0.27. These were followed by daily activities (1.98 ± 0.26). The most specific affected symptom (domain) of quality of life was itch (84.6%) and embarrassed (75.0%) (Figure. 2). A bivariate chi squared analysis showed a statistically significant relationship between itch and feeling embarrassed on the quality of life (Table 4).

Clinical variants

In our study we classified LP into; cutaneous (86.5%), mucosal (30.8%), scalp (1.9%), and nail (3.8%) (Figure.3). The most common cutaneous forms were classical (50.0%) and hypertrophic LP (23.1%), while the dominant combine form was classical-hypertrophic LP (13.5%) (Table 5, Figure. 4-5).

Mucosal oral reticular (17.3%) was predominant under mucosal type. On the scalp, planopilaris type had (1.9%); and on the nail the preponderance were distal splitting/onycholysis, yellow to brown discoloration, subungual hyperkeratosis, and chromonychia (3.9%) (Table 6, Figure. 6).

Classical-hypertrophic-mucosal oral reticular lichen planus (17.3%) was the bulk mixed presentation observed (Figure.7).

Dermoscopic features

One hundred and four lesions were examined whereby the background of most lesions was violet (25.9%), gray (22.1%), gray-blue (15.4%), gray-violet (15.4%). The pigmentary changes observed were; brown (69.2%), gray (5.8%), black (4.8). Wickham's striae were seen in 85.3% lesions; the patterns seen most were reticulate (21.2%) and diffuse 15(14.4%).

Scales had a white color (18.3%) and a patchy configuration (5.8%). Vascular structures were red dot (6.7%) and had a peripheral arrangement (2.9%). Non-vascular structure was mostly globules (11.5%) (Table 7, Figure. 8-9).

DISCUSSION

Quality of life

Majority of our participants (94.2%) experienced some level of impairment of their QOL. Some other st-

udies were agreeable to this finding further compounding the global effect of lichen planus on quality of life[10,14]. A large number of participants had a moderate to very large effect on QOL with symptoms and feelings (3.63 ± 0.27) being the most impacted domain.

Lesions of LP are often unsightly and itchy which can lead to stigma, feeling embarrassed, and disruption of daily activities. Itch X2(1, n=52) = 17.51, p=.000 and embarrassment X^2(1, n=52) =9.55, p<.002 were significantly related to the effect of LP on QOL. Participants who had itch and felt embarrassed by their condition were more likely to have a lower quality of life compared to those who did not have itch nor were embarassed. These findings are similar to those from some other parts of Africa and Asia[14–18].

Clinical variants

We classified the clinical variants of lichen planus based on both location and morphology. The forms were grouped into cutaneous, mucosal, nail, and scalp lichen planus. Cutaneous lichen planus emerged as the predominant form presenting in (86.5%) of study participants. There was less involvement of the mucosa, scalp and nails. Even though only new lesions were analyzed in our study, these findings were relatable to those in other parts of the world that also studied older lesions[19,20]. Mucosal involvement was mostly oral (30.8%) that was comparatively higher to findings from Senegal, Nigeria and Pakistan [3,21,22] these is because population characteristics may be variable. But similar to other studies the scalp (1.9%) was the least affected[3].

Classical lichen planus at (50%) was the most common morphological variant seen on most of the skin types which is type 5 and type 6. Followed by hypertrophic LP at (24.1%) while zosteriform (1.9%) a less reported form was the least common and unique variant observed in our study. Relatable findings were observed in studies that had a closeness in design and methodology to ours [1,3,20] , while those that differed in design and duration had slight differences in findings[21].

Oral mucosal involvement was predominantly reticular (17.3%). This finding is reported less in Africa but where mucosal patterns have been erosive Cassol et al., [23] but our patients had mostly a papular genital component. Nail involvement occurred in (3.9%) with predominant signs being distal splitting/onycholysis, chromonychia, subungual hyperkeratosis, and yellow to brown discoloration, which were similar to other studies by [24,25].

Dermoscopic features{Citation}

In our study the dermoscopic features assessed were; background, pigmentary changes, wickham's striae, vascular changes, scales and non-vascular structures on type 5 and 6 skins. Preponderance of lesions had a violaceous (25.9%) and gray background (22.1%) while others had a mixed gray-blue (15.4%) and gray-violet (15.4%) background.

Lesions in people of fair skin tend to have violet, pink, brown or even yellow background [8,26] while lesions in darker skin types have violet, gray, mixed violet/gray background [9,27] due to the higher melanin content that may influence the background appearance.

Pigmentary changes observed were mostly brown color in (69.2%) and patch pattern in (38.5%) these are similar to findings from Tanzania [9] .This pattern is likely influenced by the melanin content and effects of UV exposure in the sub-Saharan areas. Contrasting findings were reported in people of fairer skin types [26,28].

Wickham striae (WS) is often a significant dermoscopic finding in lichen planus[26,28]. Similarly, in our study it was seen in (78.9%) CI (71.0% to 86.7%). Most WS was of the reticulate (21.2%) and diffuse (14.4%) patterns. Other findings unique to our study were non-vascular features such as globules

(11.5%) and white patchy scales (18.3%). Vascular changes were characterized by dominant red dots (6.7%) of a peripheral arrangement (2.9%). Some of these findings are probably unique to people with darker skin types and specifically type 5 and type 6 as in our study. s

Conclusion

A significant number of patients had a moderate to very large effect on their quality of life. Itchy skin and a feeling of embarrassment significantly affected the quality of life. Classical and hypertrophic were the most common forms of lichen planus. Zosteriform LP a rarely reported form was least observed. Most lesions had a violaceous or a grayish background, and had brown pigments arranged peripherally with a reticulate and diffuse wickham's striae patterns.

Recommendation

1. Routine assessment of quality of life that encompasses mental, physical, and social well-being should be incorporated in the management of lichen planus.
2. Adopting dermoscope in our health facilities will close the gap in the unmet need for dermatopathologists.

Strength

The study included cutaneous, nail, scalp and mucosa variants compared to other studies and use of validated DLQI tool.

Limitation

This was a single-site study.

Abbreviations

CALP	Cutaneous Actinic lichen planus
CCLP	Cutaneous Classical lichen planus
CHLP	Cutaneous Hypertrophic lichen planus
CLP	Cutaneous lichen planus
CLPP	Cutaneous Lichen planus pigmentosus
CLPPE	Cutaneous Lichen planus pemphigoid
DLQI	Dermatological Life Quality Index
DRGT	Directorate of Research and Graduate Training
DSO	Distal Splitting/Onycholysis
FRC, MUST	Faculty of Research Committee, Mbarara University of Science and Technology
LP	Lichen planus
MELP	Mucosal Erosive lichen planus
MPLP	Mucosal Papular Lichen planus
MRLP	Mucosal Reticular lichen planus
MRRH	Mbarara Regional Referral Hospital
MUST	Mbarara University of Science and Technology
OLP	Oral Lichen planus

QoL	Quality of Life
REC, MUST	Research Ethics Committee, Mbarara University of Science and Technology
WS	Wickham striae

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LEGEND OF FIGURES

Figure 1; Distribution of participant's age by gender

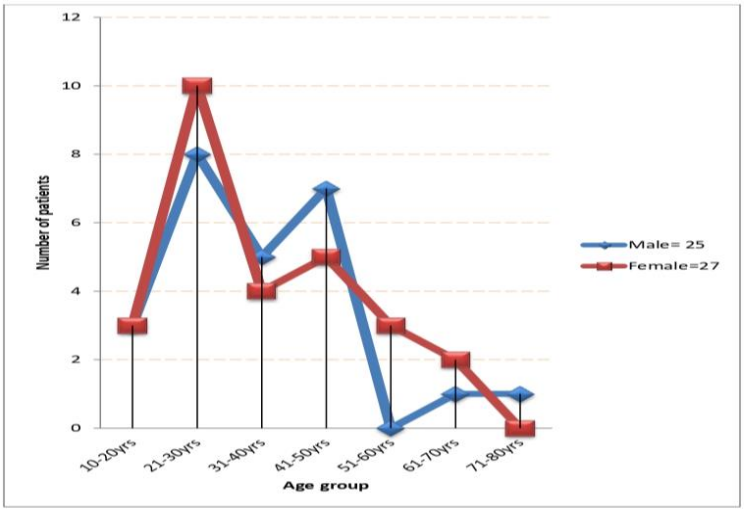

Figure 2; Distribution of specific quality of life domains affected among adult patients

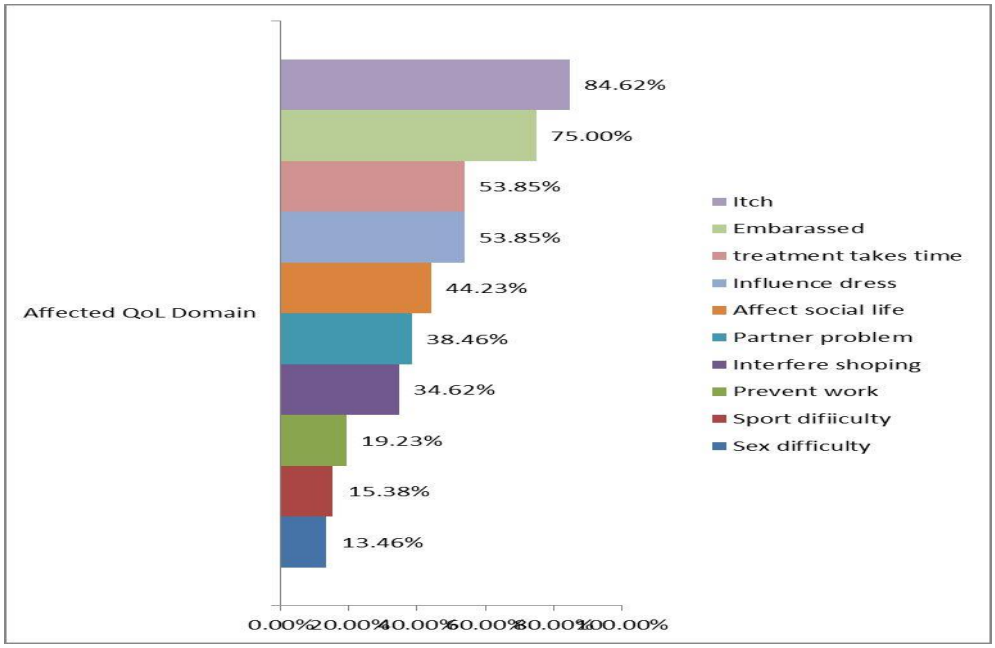

Figure 3; Clinical variants of lichen planus based on location

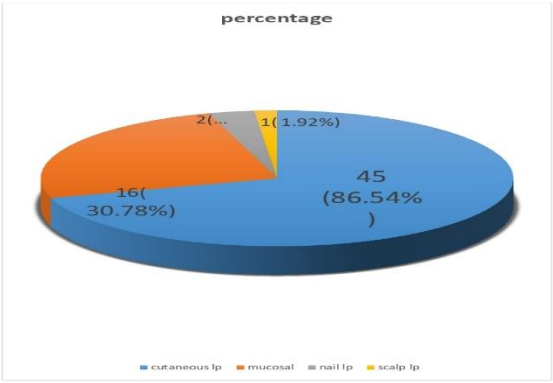

Figure 4a, b, c and d; Cutaneous classical lichen planus

Figure 4e; Koebnerization

Figure 5a & b; Hypertrophic lichen planus

Figure 6a; Mucosal oral reticular variant of lichen planus on vermillion

Figure 6b; Mucosal oral reticular variant of lichen planus on buccal

Figure 6c; Nail lichen planus

Figure 7; mixed types of LP clinical variants based on location and morphology.

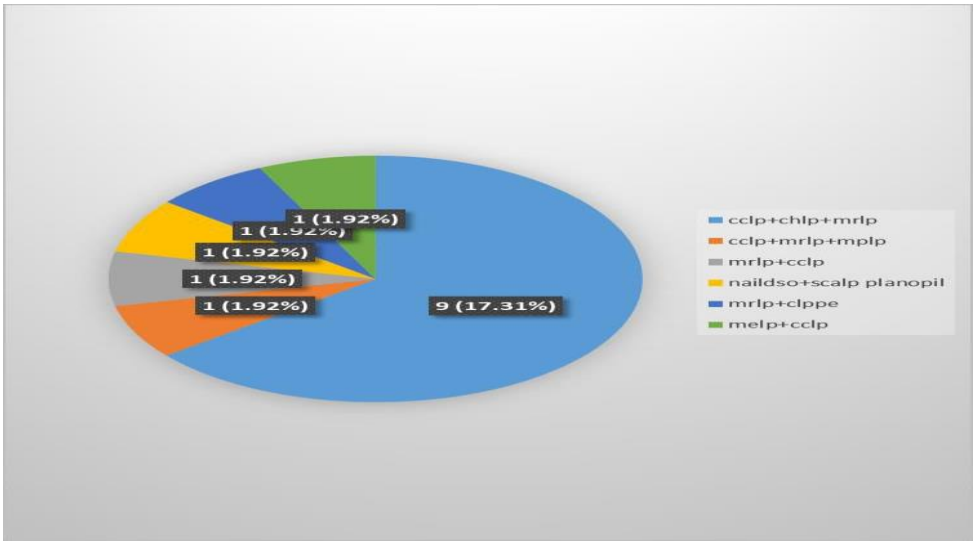

Figure 8a; Gray background, identified by the red arrow.

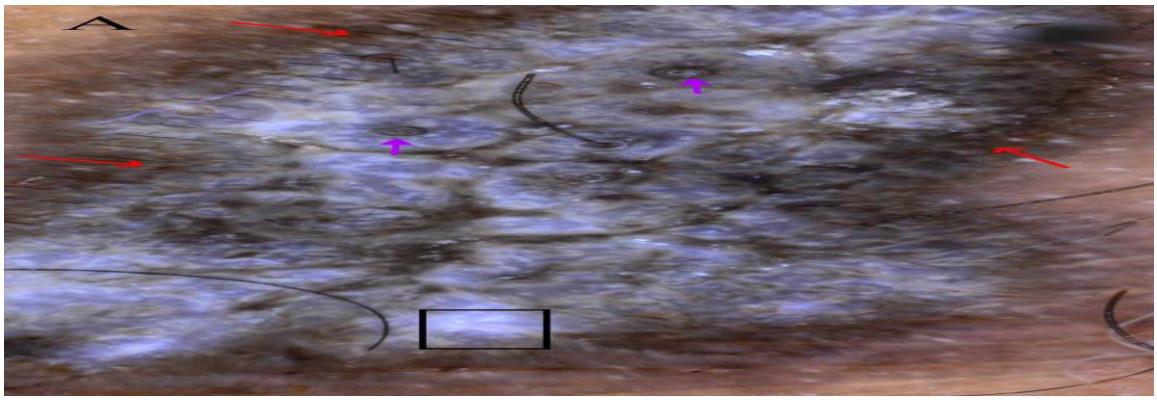

Figure 8b; Violet background represented by the yellow arrow.

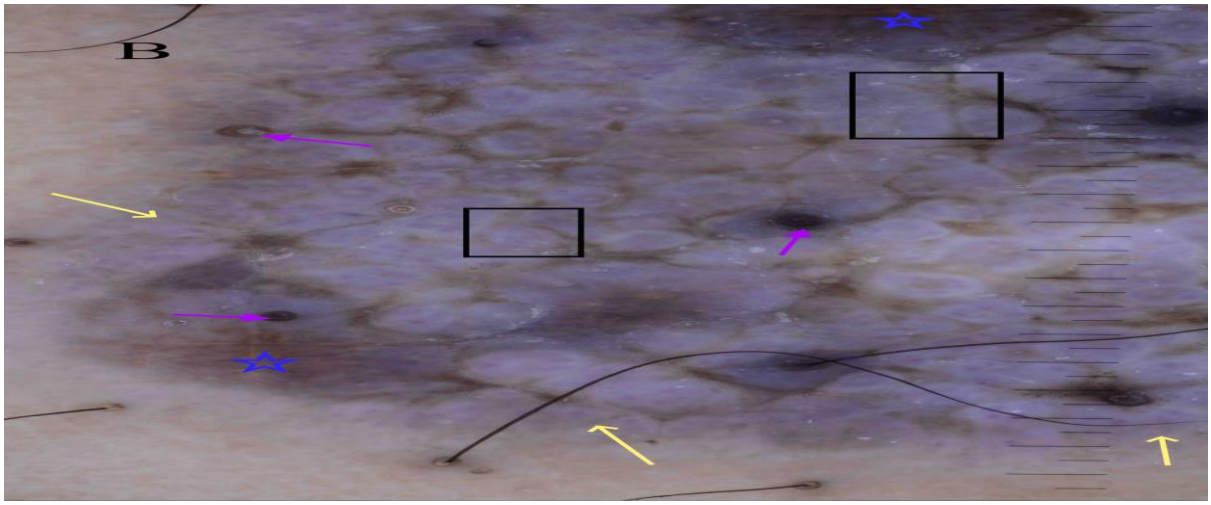

Figure 8c; Reticulate Wickham striae, outlined within black boxes.

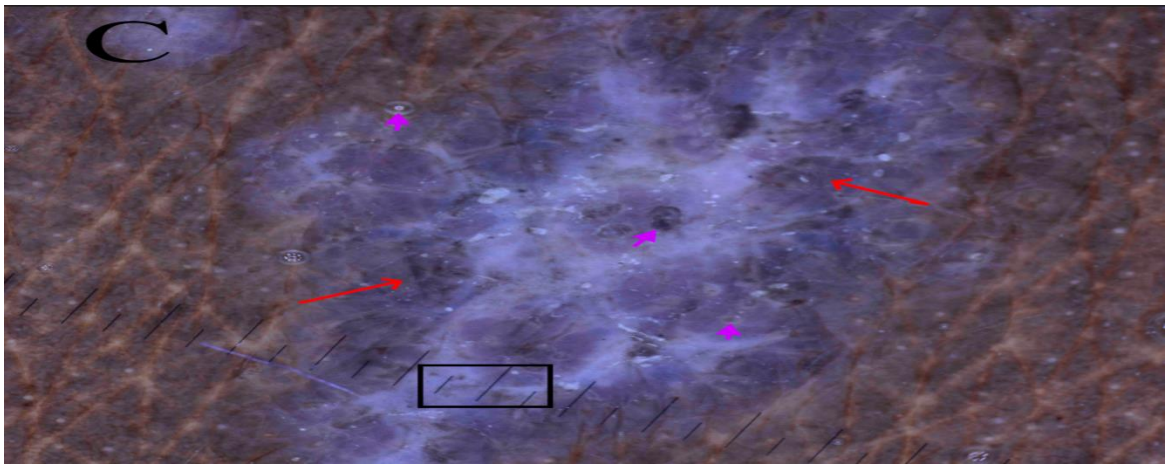

Figure 8d; Pigmentary changes in brown color are indicated by the blue star.

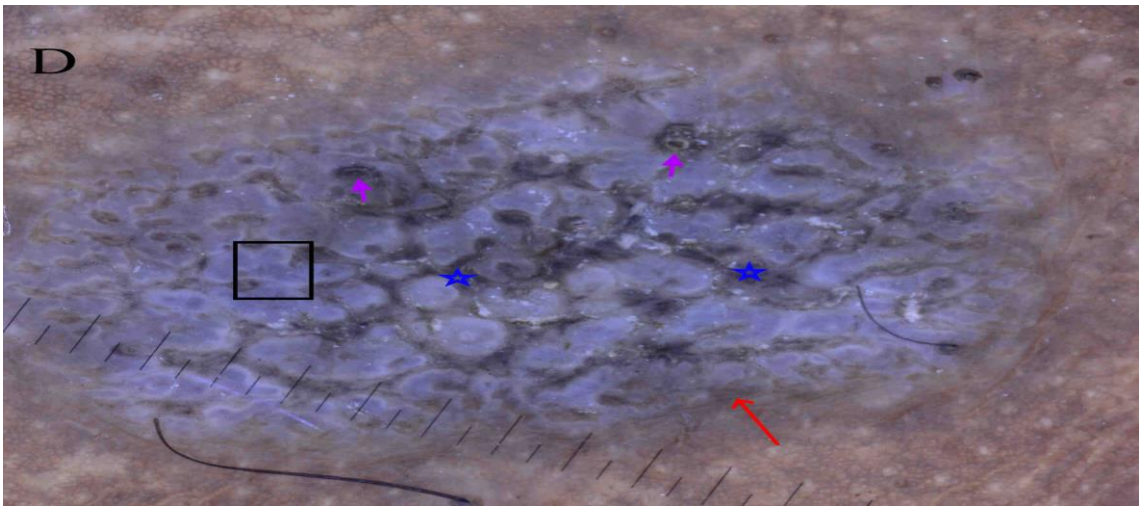

Figure 8e; Pigmentary changes in brown color are indicated by the blue star, Reticulate Wickham striae, outlined within black boxes

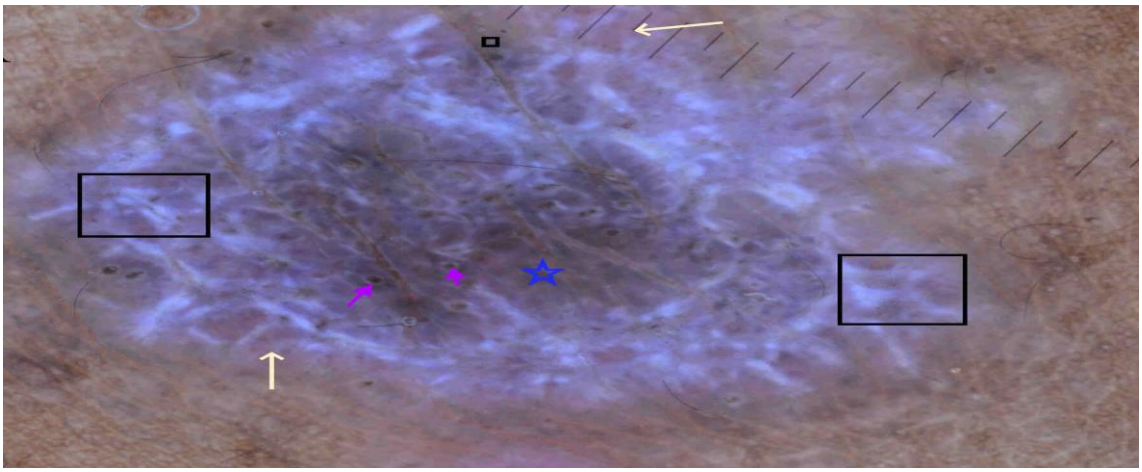

Figure 9a; Reticulate Wickham striae, outlined within black boxes.

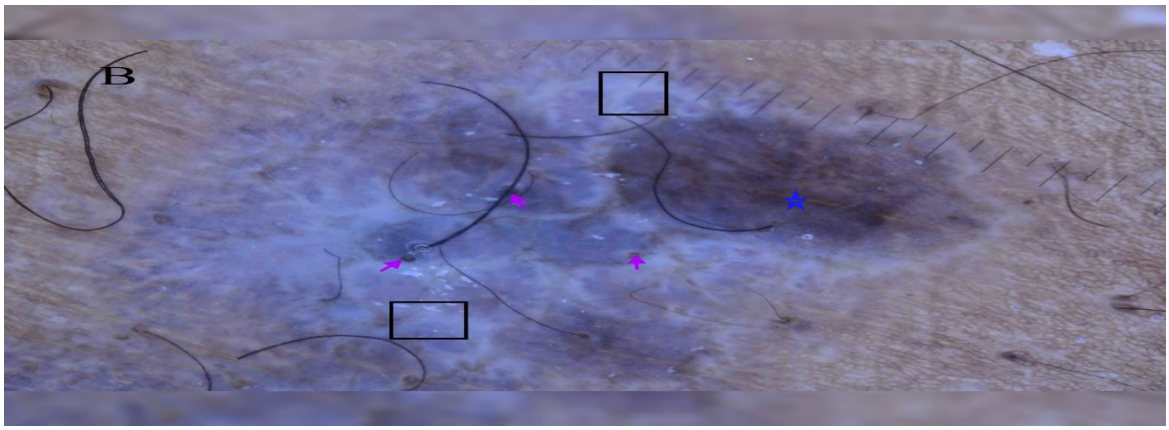

Figure 9b; Non-vascular structures resembling globules presented by purple full arrow

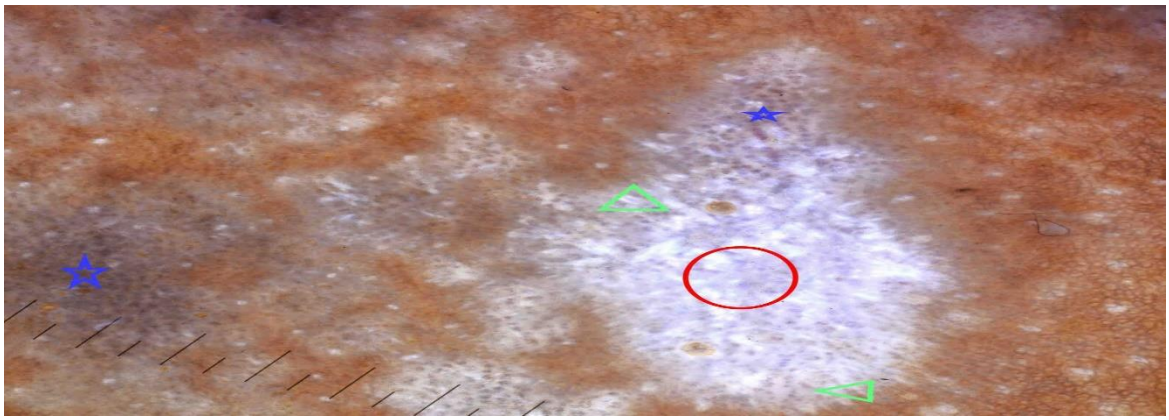

Figure 9c; Radial streaming Wickham striae are marked with green triangles.

Figure 9d; Diffuse Wickham striae presented in red circle.

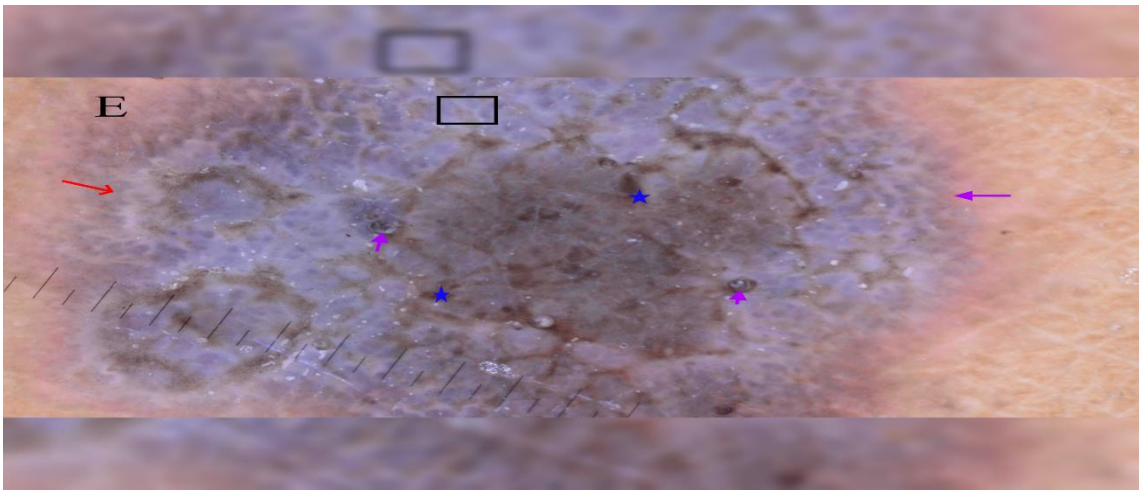

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Table 1: Distribution of participant age categories

Classification	Category	Frequency (%)
Median	**34.5 IQR 25:47**	
Age	**21-30yrs**	**18(34.62)**
	41-50yrs	12(23.08)
	31-40yrs	9(17.31)
	10-20yrs	6(11.54)
	61-70yrs	3(5.77)
	51-60yrs	3(5.77)
	71-80yrs	1(1.92)
Gender	**Female**	**27(51.92)**
	Male	25(48.08)

Table 2: Degree of quality of life impairment among adult patients at the MRRH skin clinic

Range of scores	Frequency and proportion (%)	DLQI Interpretation
0 - 1	7(13.46)	No effect on quality of life
2 - 5	8(15.38)	Small effect on quality of life
6 - 10	13(25.00)	Moderate effect on quality of life
11- 20	**19(36.54)**	**Very large effect on quality of life**
21- 30	5(9.62)	Extremely large effect on quality of life

Table 3: DLQI subscale score among adult patients with LP at MRRH skin clinic

DOMAIN	MEAN (+/-)SD	MIN	MAX
Symptoms and feelings	**3.63 0.27**	**0**	**6**
Daily activities	1.98 0.26	0	6
Leisure	1.31 0.25	0	6
Work and School	0.36 0.12	0	3
Personal relationship	1.23 0.25	0	6
Treatment	1.21 0.18	0	3
Total DLQI scores	**9.73 0.88 Moderate effect**	0	30

Table 4: Chi square analysis of quality of life among patients with LP at the MRRH skin clinic

Characteristic	QoL impaired		Degree of freedom X^2	P value
	no	yes		
Has no Itch Has Itch	3 0	5 44	1 17.5102	.000
Not Embarrassed Embarrassed	3 0	10 39	1 9.5510	.002
Not-Interfered shopping Interfered shopping	3 0	31 18	1 1.6855	.194
Doesn't Influence dress Influence dress	3 0	21 28	1 3.7143	.054
Norma social life Affect social life	3 0	26 23	1 2.5250	.112

Doesn't affect sport Affect sport	3 0	41 8	1 0.5788	.447
Doesn't prevent work Prevent work	3 0	39 10	1 0.7580	.384
No partner problem Partner problem	3 0	29 20	1 1.9898	.158
No Sex difficulty Sexual difficulty	3 0	42 7	1 0.4952	.482
Treatment doesn't take time Treatment takes time	3 0	21 28	1 3.7143	.054

Table 5: Clinical variant of LP based on morphology among adult patients at the MRRH skin clinic (n=52)

CUTANEOUS LP VARIANTS	FREQUENCY (N)	PERCENTAGE (%)
Classical LP	**26**	**50.00**
Hypertrophic LP	12	23.08
LP Pigmentosus	6	11.54
LP Pemphigoides	1	1.92
Palmoplantar LP	2	3.85
Actinicus LP	5	9.62
Linear LP	3	5.77
Exanthematous (Acute)LP	1	1.92
Bullous LP	1	1.92
Blackshoid LP	1	1.92
Annular LP	2	3.85
Zosteriform LP	1	1.92
Classical + Hypertrophic LP	**7**	**13.46**
Classical + Actinicus LP	2	3.85
Classical + Palmoplantar LP	1	1.92

Table 6: Other LP variants based on site and morphology (mucosal, scalp, and nail) among adult patients at the MRRH skin clinic

Other LP variants			Frequency(n)	Percentage (%)
Mucosal	**Oral**	**Reticular**	**9**	**17.31**
		Erosive	1	1.92
		Reticular + erosive	2	3.85

	Genital	Papular		3	5.77
		Plaque		1	1.92
Scalp		Diffuse		0	0
		Planopilaris		**1**	**1.92**
Nail		Distal Splitting/Onycholysis		2	3.85
		Yellow to Brown Discoloration		2	3.85
		Subungual Hyperkeratosis		2	3.85
		Chromonychia		2	3.85
		Lateral thinning		1	1.92
		Dorsal pterygium formation		1	1.92
		Twenty nail dystrophy		1	1.92
		Melanonychia		1	1.92

Table 7: Dermoscopic feature of lichen planus among adult patients at the MRRH skin clinic

FEATURE	PRESENTATION	NUMBER OF LESIONS (%)	
Background		**Total 104**	
	Violet	27(25.96)	
	Grey	23(22.11)	
	Grey-blue, Grey-violet	16(15.38) 16(15.38)	
	Cream , brown	8(7.69) each	
	Violet + brown, Red, skin colored	4(4.16) 1(0.96) each	
Pigmentary change color			
	Brown	72(69.23)	
	Grey	6(5.77)	
	Black	5(4.81)	
	Brown blue	1(0.96)	
Pigment change pattern			
	Patch	40(38.46)	
	Reticulate	17(16.35)	
	Dot	13(12.5)	
	Dot + patch	3(2.88)	
	Radial stream, starry, dot +starry	2(1.92) each	
	Group dot, diffuse, dot+line, line, peripheral	1(0.96) each	

Wickham's striae		**82(78.85)**	
	Reticulate	22(21.15)	
	Diffuse	15(14.42)	
	Radial stream	6(5.77)	
	White dot, patchy, petaloid	5(4.81) each	
	Starry	4(3.85)	
	Linear, structureless	3(2.88) each	
	Reticulate+radialstream, centered,circular,	2(1.92) each	
	Radial+linear, linear+patch, peripheral, reticulate+diffuse, reticulate+petaloid, diffuse+centered	1(0.96) each	
Non vascular			
	Globules	12(11.54)	
	Black round, cream reticulate,	4(3.85)	
	Cream patchy	3(2.88)	
	Reticulate, crust, brown round	2(1.92) each	
	Yellow radial stream, yellow patchy, cream radial stream,cream dot,comodolike,corn pearl,erosion,viliform,circular,brown patchy, globule+atrophic	1(0.96) each	
Scale color			
	Whites	19(18.27)	
	White pp, yellow	1(0.96)	
Scale configuration			
	Patchy	6(5.77)	
	Diffuse , scattered, peripheral	4(3.85) each	
	Central	2(1.92)	
Vascular arrangement			
	Peripheral	3(2.88)	
	Patchy, reticulate, scattered, centered, macules	1(0.96) each	
Vascular structure			
	Red dot	7(6.73)	
	Patch	1(0.96)	

Acknowledgement

The authors do hereby extend their sincere appreciation to all the study participants and healthcare workers at study site skin clinic. We would also like to acknowledge the Mbarara Regional Referral Hospital for enabling us to carry out this study in their facility.