Addis Ababa University
Faculty of medicine
Department of community health

Using the DLQI to measure quality of life in Podoconiosis patients in wolaita zone, southern Ethiopia

BY Henok Legesse

A thesis submitted to the School of graduate studies of Addis Ababa University in partial fulfillment of the requirement for the degree of master in public health

July 2007

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Advisors: Dr. Gail Davey (MD, MBBChir)

Dr. Alemayehu worku (PHD)

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Declaration

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or another university and all that sources of materials used for this thesis have been fully acknowledged.

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Signature: _____

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This thesis work has been submitted for examination with my approval as university advisor.

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LIST OF ABBREVIATIONS

AAU Addis Ababa University

Acne-QOL: the acne- specific quality

BSc- Bachelor of Science

CHA: community health agent

CADI: Cardiff acne disability index

CIU: chronic idiopathic urticaria

CSA- Central Statistical Authority

DLQI: dermatology life quality index

IDQOL: the infant's dermatitis quality of life index

KMO- Kaiser-Meyer-Olkin

HH: house hold

MFTPA: mossy foot treatment and prevention association

MID: minimal important difference

MOH- Ministry of Health

MPH- Master of Public Health

NGO: non-governmental organization

PCA- Principal Component Analysis

PDI: psoriasis disability index

PFA- Principal Factor Analysis

PPS- Probability Proportional to Size

QOL: quality of life

Q-Q plot- Quantile-by- Quantile plot

SD: standard deviation

SF: short form

SNNPRS: south nation's nationalities people's regional state

SPSS- Statistical package for Social sciences

WHO- World Health Organization

ABSTRACT

Back ground: Podoconiosis is non-infective, usually crystalline Blockage of the limb lymphatic, almost always affecting the lower limbs. In Ethiopia Podoconiosis is an important public health problem in endemic areas like Wolaita zone. Podoconiosis has a serious social and psychological burden. The importance of assessment of quality of life has gained considerable value in recent years .There are several benefits of measuring QOL.

Objectives: The objective of the study was to asses the applicability of DLQI in measuring the quality of life of Podoconiosis patients.

Methods: A cross sectional study was conducted in wolaita zone, SNNPR Ethiopia in eight MFTPA`s outreach sites using the translated Amharic version of DLQI**.**

Results: the questioners were administered to 148 Podoconiosis patients, 80 males and 68 females. Patients' ages ranged from 17-78 years (mean 35.95 years, SD 16.112,).fifty percent were new patients and the rest were patients treated for a minimum of three months at MFTPA. Twenty eight (18.9%) of patients were from urban areas and the rest were from rural sites. The Cronbach`s alpha was 0.71 among treated patients and 0.78 among new patients. Item total correlation ranged from 0.39-0.47. The DLQI score for new patients ranged from 4 to 21 (mean 12.76, median 13.00, SD 3.81) and those for treated patients ranged from 1 to 18 (mean 4.08, median 3.00, SD 3.16). The ranked mean difference between the two groups was statistically significant. (Z=-0.9477, p value< 0.000). There was no statistically significant difference between age, sex and outreach sites groups regarding the overall DLQI score.

Conclusions: In conclusion it was found that the Amharic version of the DLQI was a valid, reliable and acceptable for measuring the quality of life of Podoconiosis patients in the study settings and a three or more month treatment by MFTPA is associated with improving the quality of life.

1. INTRODUCTION AND STATEMENT OF THE PROBLEM

Podoconiosis (endemic non-filarial elephantiasis) is a non-infective, crystal-mediated inflammation of the limb lymphatic, almost always affecting the lower limbs, especially the feet. It is widely distributed in a number of countries of tropical Africa, Central and South America, North India, Indonesia, Colombia, Ecuador, Brazil and Sri Lanka [1, 2]. A recent study in wolaita zone has shown that Podoconiosis patients suffer from social burdens apart from the physical burden throughout their life due to the societal values attached to the disease. Patients are stigmatized and isolated in the society. They face difficulty in getting married, getting friends, getting neighbors and many more. Similarly a recent study in the same zone has revealed that the total cost of the disease to a zone of 1.5 million people is more than $16million. [17]

The importance of assessment of quality of life has gained considerable value in recent years. When the WHO defined health as "A state of complete physical, mental and social well-being, not merely the absence of disease or infirmity," it implied that the assessment of health and health care should not only include traditional measures of morbidity and mortality, but should also include broader assessment of quality of life (QOL) [4]. Measuring the quality of life has important uses in many areas in medical practice, including improving the doctor-patient relationship, assessing the effectiveness and relative merits of different treatments, evaluation of health services, undertaking research, and in policy making. [4]

There are two types of QOL measurements: general measures and specific measures. General measures, such as the SF-36 (Short Form-36), Euroqol-5 or Sickness Impact Profile, are designed to be used across all diseases. Disease-specific measures include the Psoriasis Disability Index (PDI), the Cardiff Acne Disability Index (CADI), the Acne-Specific Quality of Life Questionnaire (Acne-QOL), amongst others. [5]

Different inflammatory skin diseases affect individuals in similar ways suggesting that dermatology-specific measures may be used across all skin diseases. [5] The Cardiff Dermatology Life Quality Index (DLQI) is a well-established dermatology-specific QOL measure. The Dermatology Life Quality Index (DLQI) was chosen for this study in view of its ease of application to a variety of skin diseases, its ease of use in a busy outpatient setting, and because it has been widely validated.

This study was therefore designed to investigate use of the DLQI in measuring self-reported quality of life among out-patients with Podoconiosis in Wolaita Zone, southern Ethiopia.

2. Literature Review

2.1 Podoconiosis definition and distribution

Podoconiosis is widely distributed in many areas of the world, occurring in Africa, Central America, Colombia, Ecuador, Brazil, Indonesia, northwest India, and Sri Lanka. It is seen in susceptible families of bare-footed farmers in well-defined fertile volcanic highland zones of these areas, and also in the lowlands irrigated by rivers from these highlands [2, 8].

Podoconiosis is widely distributed in Africa and especially in the higher altitude Regions of eastern, central and western parts of the continent. In Africa the disease is said to be highly prevalent in the highlands of Angola, Mozambique, and Madagascar [2, 8]. Observations have shown that the disease occurs in bare footed people who work on soil of volcanic origin, under tropical conditions at altitudes around 1500 meters [9, 10, 11]. A study done in the Cameroon highlands, in West Africa, showed that the prevalence of elephantiasis closely follows the distribution of the red clay area, mainly above 1000 meters altitude [12, 13]. The presence of elephantiasis of the lower legs of unknown cause in Ethiopia has been recognized for a number of years [14].

Podoconiosis is highly spread over a large area of Ethiopia [10]. Earlier studies, between 1935 and 1940, of numerous cases of elephantiasis in Shoa, the then central province of Ethiopia, revealed no micro filariae in the peripheral blood taken either by day or by night. Similarly, no micro filariae were detected in 50 cases of elephantiasis examined in Harar province [10, 15].In a recent study conducted in wolaita a capillary blood sample was taken at midnight for thick film from 205 patients and in a sub sample of 117 patients, rapid antigen testing using Binax™ antigen cards was also performed. Both tests were

negative in all patients. In Podoconiosis-endemic areas, clinical examination is a valid means of diagnosing Podoconiosis [16]

The most recent survey on Podoconiosis in Ethiopia was conducted in 2001 in Wolaita zone, Southern Ethiopia among 4210 households. The mean zonal weighted prevalence of Podoconiosis was 5.46%. The majority (64%) of the cases found were between 16 and 45 years. The male to female ratio of cases was very similar to the sex ratio in the general population [3]. Endemic elephantiasis is a major health and economic problem in Ethiopia. The disease, although not fatal, causes progressive deformity and disability, which degrades the quality of life and the already poor economic situation [17] Podoconiosis could be completely prevented if those at risk were to wear shoes. Early stage disease can be reversed by washing the feet with soap and water, and using hydrating ointment and footwear. Once advanced stage disease has developed, treatment is only partially successful, and includes elevation, use of compression bandages and at a last resort, nodulectomy. [10, 13, 18].

There is lack of knowledge of the cause, prevention and treatment of the disease among health professionals. [19]

2.2 Quality of life definition and relevance

Skin diseases have been shown to have a significant adverse impact on the health-related quality of life of patients which may be underestimated by objective assessments of clinical severity [9]

In a study to select an instrument for cross-cultural measurement of health-related quality of life applied to dermatology, six dermatology-specific scales were identified: Impact of Skin Disease Scale (IMPACT), Dermatology Life Quality Index (DLQI), Skindex, Dermatology Quality-of-Life Scales (DQOLS), Dermatology Specific Quality of Life (DSQL) and Qualita di Vita Italiana in Dermatologia (QUAVIDERM). The ADAPT Index for each of the above was determined at the time of the study and the DLQI was chosen for adaptation (ADAPT = 77, October 1997). [25]

2.3 The DLQI – scoring and Interpretations

The DLQI consists of 10 questions with simple tick-box answers scored from 0 to 3. The Dermatology Life Quality Index questionnaire is designed for use in adults, i.e. patients over the age of 16. Each question is answered by a tick box, selecting one of four possible answers. Questions are scored on a 4-point Likert type scale with 0 = “not at all”, 1= “a little”, 2 = “a lot “, and 3 = “very much”. The total score is calculated by summation of the scores for each item with a maximum of 30 and a minimum of 0 (zero). If one question is unanswered, it is scored 0 and the scores are summed and expressed out of a maximum of 30.If two or more questions are unanswered the questionnaire is not scored; if question 7 is answered “yes” this is scored as 3. If question 7 is answered “no” or “not relevant”, then either “a lot” or “a little” is ticked. This is then scored as 2 or 1, respectively; The DLQI is calculated by summing the score of each question resulting in a maximum of 30 and a minimum of 0. The higher the score, the more quality of life is impaired. The DLQI can also be expressed as a percentage of the maximum possible score of 30. [27, 28]

Interpretation of the meaning of DLQI scores is usually performed as follows: 0-1 = no effect at all on patient's life; 2-5 = small effect on patient's life; 6-10 = moderate effect on patient's life; 11-20 = very large effect on patient's life; 21-30 = extremely large effect on patient's life [5, 29].

In a study done among general dermatological patients and controls, the DLQI was completed by 100 healthy volunteers; their mean score was very low (1.6%, SD 3.5) compared with the mean score for the dermatology patients (24.2%, SD 20.9). The reliability of the DLQI was examined in 53 general dermatology patients using a 1-week test-retest method and reliability was found to be high (gamma s = 0.99). [28]

In one study conducted to assess the MID that is the minimal important difference in mean DLQI after treatment among chronic urticaria patients it was found that a threshold, in the range of 2.24 to 3.10, could be used to interpret meaningful change in clinical studies [30]

Studies have shown evidence of validity for the DLQI, because the instrument demonstrated the ability to detect small but meaningful changes in clinical status over time in a large sample of patients with psoriasis. [31]

DLQI scores were measured among 203 LF patients recruited from a clinic and from the community in Orissa, India. The DLQI score ranged from 0 to 17, with a mean score of 2.7 (SD 4.4) or 9.0% disability [23]. This is lower than for many skin diseases reported so far, so a modified DLQI that focused on the affected limb rather than the entire skin was developed. The mean score using this modified DLQI was 8.2. [32]

2.4 DLQI Translations

In a study to assess the Turkish version of DLQI among general dermatological patients the mean score of DLQI was 7.61. The median of item–total correlation coefficient was found to be 0.66, within a range of 0.48–0.81. The internal consistency (0.85) of the index was found to be satisfactory, and it was concluded that the Turkish version of the DLQI was acceptable to dermatologists and dermatology patients, valid and reliable. [33]

The Danish version of DLQI was administered to 200 outpatients and 100 hospitalized patients suffering from a range of dermatological diseases and to 100 sex- and age-matched healthy controls. Mean scores, internal consistency and test-retest reliability were comparable to the results reported for the original English version. [34]

In a study of reliability and validation of the Persian version DLQI among vitiligo patients, scores ranged from 0 to 24 (mean ± SD, 7.05 ± 5.13). Reliability analysis showed satisfactory result (Cronbach`s α coefficient = 0.77). [7]

The DLQI instrument was also translated into Japanese and tested among acne patients the participants reported no difficulties in answering the DLQI items. The mean score of DLQI was 3.99(SD: 3.99), and responses were found to be reproducible and stable. Results of principal-component and factor analysis suggested that this scale measured a single construct. The Japanese DLQI provided valid and reliable data despite having only a small number of items [35].

Skin hygiene and skin care are effective and important interventions in the management of lymph edema secondary to lymphatic filariasis. The impact of education and foot hygiene on quality of life as evidenced by change in DLQI score was found to be significant [36, 42].

The DLQI has been described in at least 36 skin diseases in more than 130 articles and published abstracts, in 17 countries and 21 languages [28]. Use of the DLQI has allowed new insights into several aspects of clinical dermatology [6].

3. Objectives

3.1 General objective

The general objective of the study was to assess the applicability of the DLQI in measuring the quality of life of Podoconiosis (chronic non filarial elephantiasis) patients

3.2 Specific objectives

3.2.1) To measure the quality of life of Podoconiosis patients using the DLQI instrument

3.2.2) To assess whether treatment for 3-months or more by the Mossy Foot Treatment and Prevention Association (MFTPA) is associated with lowering in DLQI score

4. METHODOLOGY

4.1 Study area and period

The study was undertaken from August 2006 to June 2007 in Wolaita zone of the

Southern Nations Nationalities and Peoples' Region (SNNPR), Ethiopia. Wolaita zone has a total area of 4541 square kilometer divided into 10 *'woredas'*. It is approximately 2000 meters above sea level. The Wolaita population is about 1.5 million. Of these, 115,569 (7.78%) live in urban areas and the rest 1,370,652 (92.22%) live in rural areas Wolaita is densely populated area with an average of 290 people/km². The dominant soil geology is basalt and the climate is mainly (75.7%) *'woinadega'* (medium altitude, 1500-2500 meters) followed by *'dega*' (highland > 2500 meters,13.9%). The majority of the population earns their livelihood from crop production (61.3%) followed by livestock rearing (22.3%). [15, 17, 38]. The literacy status of the Ethiopian population is low. The total adult literacy rate is 36% (46% for males and 25% for females) [40].A recent study in wolaita zone has shown that 74.4% (n=234) of Podoconiosis patients can't read and write and 10.7% of them were less than grade 1 [17]. Because of this fact the questioner was administered by trained MFTPA outreach site workers.

According to the survey performed in 2001, there were at least 81,000 Podoconiosis patients in the zone [3]. Wolaita zone was therefore selected for endemicity of Podoconiosis, the presence of the Mossy Foot Treatment and Prevention Association (MFTPA), and previous experience of the place by the principal investigator and advisor.

4.2 Study design

Phase 1 Development of Amharic DLQI

The DLQI was first translated according to procedures listed on the Cardiff DLQI [5]. In brief, the DLQI was translated by two translators into Amharic (the language of officialdom in Ethiopia), and then back translated by two translators independent of each other and the original translator. The back translation was reviewed by Prof Andrew Finlay, revisions made to the Amharic version, and a final independent back translation made. Emphasis was given to maintain the original context and meaning of the words rather than a direct word by word translation. The Amharic version developed is now available on the DLQI website.

The Amharic DLQI was reviewed by health workers at the MFPTA and Wolaita hospital who had experience with Podoconiosis patients. Their comments helped to establish face

validity before the DLQI was used among patients.

Phase 2 Use of Amharic DLQI among Podoconiosis patients

4.3 Source and study population

The source population was all Podoconiosis patients in Wolaita zone (age >16 years). The study population was Podoconiosis patients newly registering at MFTPA outpatient sites and patients treated for ≥3 months at these sites.

4.4 Sample size determination

Sample size was determined using the formula for comparison of two means

$n_1 = 2\,[1+1/r]\,[Z_{\alpha/2} + Z_{\beta}]^2\,\sigma^2 / [\mu_1 - \mu_2]^2$

Assumptions include equal variance of σ , a confidence level of 95 %, power of 90%, a design effect of 2 and 10 % allowance for non- response and missed cases.

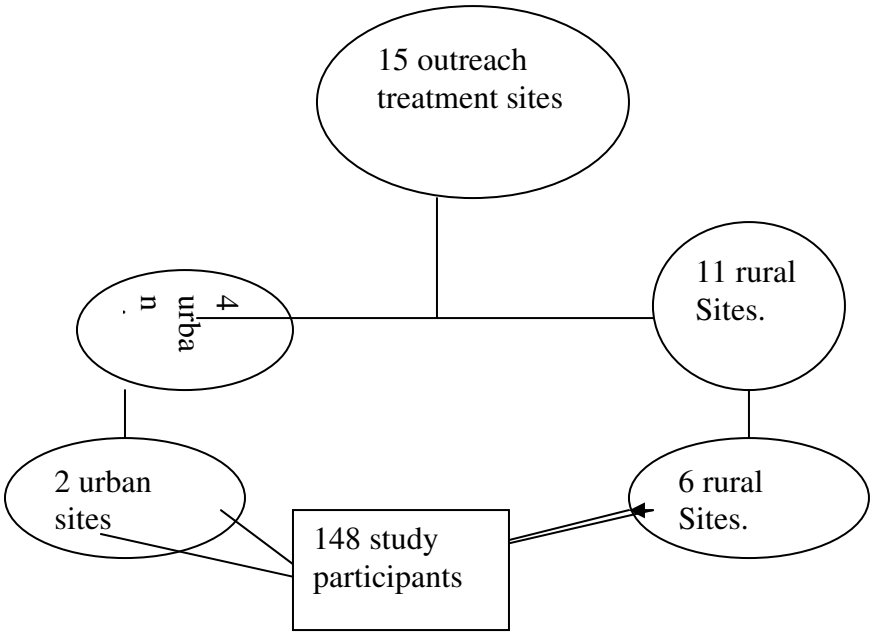
n_1 =the sample size in each group of patients. r is the ratio of the size of sample 2 to sample1, as the two samples are equal r = 1.

In a study conducted among general dermatology patients the mean DLQI score was found to be 7.26, SD= 6.27 for patients and 0.48, 1.05= 3.5 for healthy controls [28]

In another study conducted to identify clinically meaningful change in DLQI score a score change in the mean DLQI of five or more was found to an important cut-off point. Therefore the difference in DLQI score between the two groups of patients ($\mu_1 - \mu_2$) was set at five. [5]

The sample size n_1 (the sample size in each group) was calculated to be 67, and after adding 10% of the calculated sample size (7) for non response the final sample size in each group becomes 74 thus the total sample size was 148.

Figure 1.Schematic presentation of data collection



4.5 Inclusion criteria

Podoconiosis patients aged >16 years newly registering at or returning to an MFTPA outreach site. Sixteen years of age was set as a cut-off point for consistency with previous studies using the DLQI [28]

4.6 Exclusion criteria

People with other physical disabilities, blindness or major psychiatric illness were excluded from the study because these conditions may already affect their quality of life

4.7 Sampling procedure

The fifteen MFTPA outreach sites were stratified into 11 rural and 4 urban sites, the two urban sites were *Gesssuba* and *Boditi* , the number of patients to be included in the study from each site was calculated by PPS and it was 10 and 18 respectively in the two urban sites the number of patients including treated and expected new patients in the two sites were 384 and 601 respectively . The six rural sites were *Damot Fallosa, Gello, Kercheche, Belloso Sore , Guneno and Bonbe* , the number of patients included in the

study from each sites was calculated by PPS and it were 16,12,20,12,26, and 34 respectively in the six rural sites. The number of patients including treated and expected new patients in the six rural sites was 509,420,387,749,938 and 1188 respectively. The source of the patients estimates in each site is from MFTPA preliminary survey that was done before establishing treatment center in the sites, which includes both new and treated patients. All newly registering patents in the specified data collection period were included in the study until the required sample size was reached. Systematic sampling using the MFTPA registration book as a sampling frame from a random start point was employed to recruit treated patients. The outreach sites workers with close supervision by the supervisors and PI recruited the study subjects and interviewed at the respective outreach sites.

4.8 Pre- testing

The Amharic DLQI was pre-tested in one rural and one urban '*kebele'* among 8 people. The instrument was found to be clear, short and, understandable.

4.9 Variables of the study

4.9.1 Independent variables: patient factors: age, sex, treatment site, duration of treatment.

4.9.2 Dependent variable: DLQI score among new and treated patients.

4.10 Data processing and analysis

Data were entered into EPI-Info 2002 software, cleaned and then exported to SPSS v13 for further analysis. Analysis included frequency distributions followed by the Kolmogorov-Smirnov and Shapiro-Wilk tests for normality. Means, modes, medians, and standard deviations were calculated. The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were calculated to assess whether factor analysis could be carried out appropriately. Average inter-item correlation, item total correlation and Cronbach's alpha were calculated to assess reliability. In all cases p value less than 0.05 was considered to be statistically significant unless otherwise it is specified.

4.11 Data quality assurance

All data for each treatment center were checked for completeness, accuracy, clarity and consistency by the principal investigator and the field supervisor immediately after the collection.

About 10% of the data were re-entered to verify the accuracy of data entry (average inter-correlation = 0.99).

4.12 Ethical Considerations

Ethical approval and clearance was obtained from ethical committees of the Department of Community Health and Faculty of Medicine. Local officials were contacted and permission was secured. Explanation about the purpose and procedures of the study was given and verbal consent was obtained from each respondent. Health education was provided about the disease for the patients.

5. Results

5.1 Back Ground Information

One hundred and forty eight patients with Podoconiosis were studied, eighty males and sixty eight females. Patients' ages ranged from 17-78 years (mean 35.95 years, SD 16.112, median 35).Patients were selected such that seventy four (50%) were new patients and seventy four were patients treated for a minimum of three months at MFTPA.

All participants responded to all questions in the DLQI questionnaire, and all questionnaires were marked legibly and correctly.

Twenty eight (18.9%) of patients were from urban areas and the rest were from rural sites.

The Kolmogorov-Smirnov and Shapiro-Wilk tests of normality for the dependent variable DLQI for the two groups of patients were performed. They showed that the data were not symmetrically distributed for the treated patients but the data were symmetrically distributed for new patients. The value of skew ness was -0.17 and of kurtosis was –0.55 and the ratio of skew ness and kurtosis to their standard errors were 0.61 and 1.0 respectively for new patients suggesting that the data were normally distributed. The value of skew ness was 2.24 and of kurtosis was 6.06, and the ratio of skew ness and kurtosis to their standard errors were 8.05 and 10.97 respectively for new patients which are out of the range of -1.96 to 1.96 suggesting that the data were not normally distributed. Neither log nor reciprocal transformation made the data of treated patients normally distributed, so non parametric methods were employed in the analysis when ever appropriate.

Table 1 Tests of normality of DLQI score for new and treated patients, Wolaita zone, SNNPR, 2007

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	category of patients	Statistic	df	Sig.	Statistic	df	Sig.
mean DLQI score	new patients	.083	74	.200*	.978	74	.237
	treated patients	.253	74	.000	.757	74	.000

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

5.2 DLQI score by Category of Patients and Demographics

The DLQI scores ranged from 1 to 21 (mean 8.42, median 7.50, SD 5.58). DLQI scores for new patients ranged from 4 to 21 (mean 12.76, median 13.00, SD 3.81) and The DLQI score for treated patients ranged from 1 to 18 (mean 4.08, median 3.00, SD 3.16).

Table 2.DLQI by category of patient, Wolaita zone, SNNPR, 2007

Patient Category	Mean DLQI	Median DLQI	N	SD. Deviation
New	12.76	13.00	74	3.813
Treated	4.08	3.00	74	3.161
Total	8.42	7.50	148	5.579

The difference in DLQI score between new and treated patients was tested using the Mann-Whitney U test and the ranked mean difference between the two groups was statistically significant. (Z= -0.948, p value < 0.001

The variable age was categorized it to three groups the first group was the youths (17 to 24), the second group was the adults (25-65) and the third group was the olds (above 65) the variable is categorized in this manner because the subjects in each group are believed have similar life expectations and experiences. Before categorization, correlation of age and mean DLQI score for the new patients was performed the Pearson correlation coefficient was 0.02 and p value was 0.89 suggesting that the correlation was not statistically significant. Similarly before categorization, correlation of age and mean DLQI score for the treated patients was performed using spearman's correlation the spearman's rho was -0.14 and p value was 0.39 suggesting that the correlation was not statistically significant. Mean DLQI scores for new patients ranged from 12.76 to 15 in the various age groups and The DLQI score for treated patients ranged from 1.5 to 4.25 in the various age groups (mean 4.08, median 3.00, SD 3.16)

Table 3 DLQI score by category of patients and age groups, Wolaita zone, SNNPR, 2007

Category of patients	age groups	N	Mean	Median	Std. Deviation
new patients	17-24	25	12.76	13.00	4.126

	(youth)				
	25-65(adult)	45	12.56	12.00	3.513
	above 65(old)	4	15.00	17.00	5.416
	Total	74	12.76	13.00	3.813
treated patients	17-24 (youth)	20	4.25	4.00	3.024
	25-65(adult)	50	4.22	3.00	3.278
	above 65(old)	4	1.50	1.50	.577
	Total	74	4.08	3.00	3.161
Total	17-24 (youth)	45	8.98	8.00	5.614
	25-65(adult)	95	8.17	8.00	5.375
	Above 65(old)	8	8.25	4.50	8.049
	Total	148	8.42	7.50	5.579

ANOVA analysis among the new patients showed that there was no statistically significant differences among the age groups (f= 0.75, DF= 2, p value= 0.48). Similarly krusewallas test among the treated patients was done and showed that there was no statistically significant difference among the various age groups (chi-sq. =4.23, DF= 2, p value= 0.12).

The mean DLQI scores for new patients among males was 12.2, SD= 4.34 and 13.14, SD= 2.83 among females in the same category of patients. T test has shown that there was no statistically significant difference between males and females among new patients

(t= -0.69, DF= 72, p value=0.50). The mean DLQI scores for treated patients among males was 4.51, SD= 3.30 and 3.69, SD= 3.03 among females in the same category of patients. Mann-Whitney U test has shown that there was no statistically significant differences between male and females (Z= -0.99, p value= 0.32) among treated patients

Table 4 DLQI score by sex and category patients, wolaita zone, SNNPR, 2007

category of patients	Sex	N	Median	Mean	Std. Deviation
new patients	Male	45	12.00	12.51	4.346
	Female	29	14.00	13.14	2.825
	Total	74	13.00	12.76	3.813
treated patients	Male	35	3.00	4.51	3.293
	Female	39	3.00	3.69	3.028
	Total	74	3.00	4.08	3.161
Total	Male	80	9.00	9.01	5.579
	Female	68	5.00	7.72	5.539
	Total	148	7.50	8.42	5.579

Six outreach sites which were identified by MFTPA as rural are categorized together as rural and two outreach sites which were identified by MFTPA as urban are categorized together as urban. The over all Mean DLQI ranged from 8.05 (SD 5.44) in rural sites, to 10.00 (SD 5.96) in urban sites. Among the new patients Mean DLQI was 14.71 (SD 2.84) in urban sites and 12.30 (SD 3.89) in rural sites. Among the treated patients Mean DLQI was 5.29 (SD 4.21) in urban sites and 3.80 (SD 2.83) in rural sites

Table 5 DLQI score by patient category and out reach sites, Wolaita zone, SNNPR, 2007

category of patients	out reach sites grouped	N	Mean	Median	Std. Deviation
new patients	Urban	14	14.71	15.00	2.840
	Rural	60	12.30	12.50	3.885
	Total	74	12.76	13.00	3.813
treated patients	Urban	14	5.29	4.00	4.214
	Rural	60	3.80	3.00	2.833
	Total	74	4.08	3.00	3.161
Total	Urban	28	10.00	11.00	5.957
	Rural	120	8.05	7.00	5.448
	Total	148	8.42	7.50	5.579

Among the treated patients Mann-Whitney U test was performed and has also shown that there was no statistically significant differences between the out reach sites (Z= -1.83, p value 0.07). Similarly T test among the new patients has shown that there was no statistically significant differences between the out reach sites

5.3 Symptom and Item Analysis

The mean score for each item ranged from 0.048 to 1.320 and the median ranged from zero to one. The lowest score was for the item asking about interference with sport, while the highest score was for the item concerning feeling self consciousness, signifying the psychological trauma of Podoconiosis.

5.3.1 Item 1/ Pain: The score for this item ranged from 0 to 3 (mean 1.29, median 1.00, SD 1.01). Among new patients the score ranged from 1 to 3 (mean 2.08, median 2.00, SD 0.64) and among treated patients it from 0 to 2 (mean 0.50, median 0.00, SD 0.60).In the treated patients the mean rank for this item among males was 43.94 and 31.72 among

females. Mann- Whitney U test was done and There was statistically significant difference between males and females (Z= -2.78, , p value = 0.005).There was no statistically significant difference based on age and out reach sites regarding this item among treated patient There was no statistically significant difference based on age ,sex and out reach sites regarding this item among new patients. Of the over all 148 responses to this item, 41 (27.5%) scored 0, 41 (27.5%) scored 1, 48 (32.2%) scored 2, and 18 (12.1%) scored 3. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -9.69, p<0.05)

5.3.2 Item 2/ Self-consciousness: The score for item 2, which asked about feeling self conscious, ranged from 0 to 3 (mean 1.32, median 1.00, SD 1.02). The score for this item among new patients ranged from 0 to 3 (mean 2.00, median 2.00, SD 0.84), and among treated patients from 0 to 2 (mean 0.64, median 1.00, SD 0.65). Of the 148 responses to this item, 35 (23.5%) scored 0, 56 (37.6%) scored 1, 32 (21.5 %) scored 2, and 25 (16.5%) scored 3.There was no statistically significant difference based on sex, age and outreach sites in new patients but There was statistically significant ranked mean difference based on age groups among treated patients. The age group 17-24 had the highest ranked mean and the age group >65 had the lowest mean rank. (chi. sq. =6.59, DF= 2, p value= 0.04) The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -8.23, p<0.001).

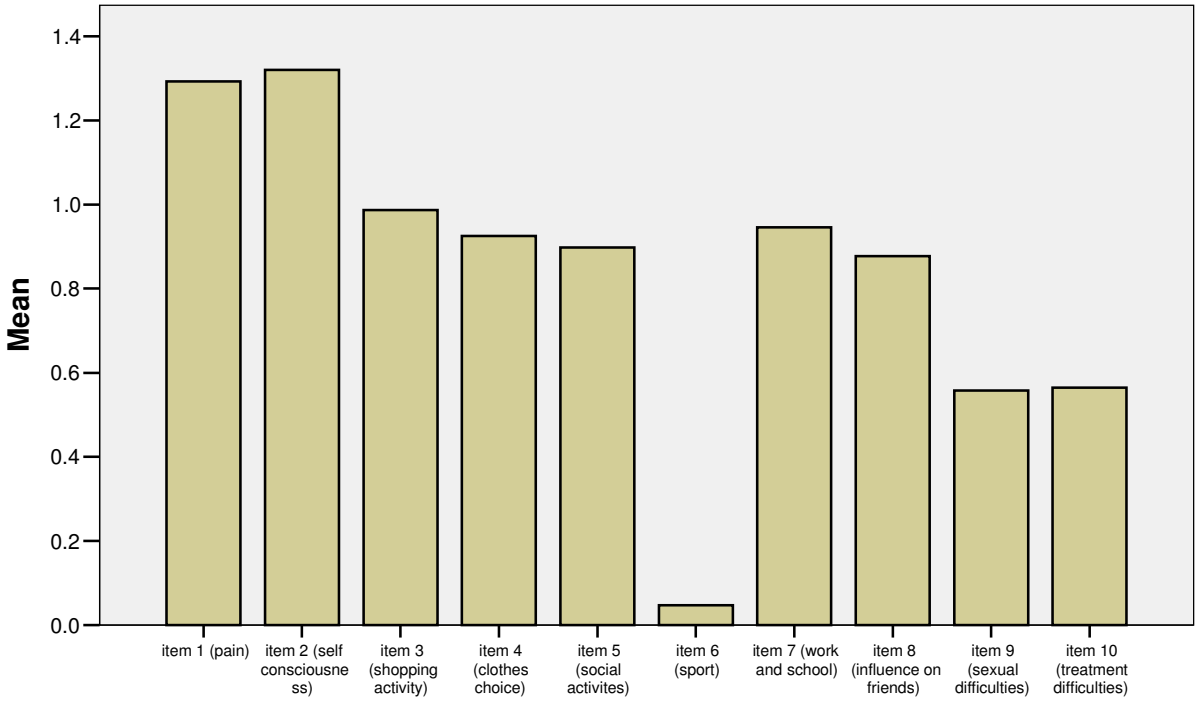
5.3.3 Item 3/ Shopping Activity: The score for item 3, concerning shopping activity, ranged from 0 to 3 (mean 0.98, median 1.00, SD 0.88). The score for this item among new patients ranged from 0 to 3 (mean 1.59, median 2.00, SD 0.66) and among treated patients from 0 to 2 (mean 0.36, median 0.00, SD 0.59). Of the 148 responses to this item 52 (34.9%) scored 0, 53 (35.6%) scored 1, 37 (24.8 %) scored 2, and 6 (4%) scored 3. There was no statistically significant difference based on sex, age and outreach sites in both new and treated patients. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -8.77, p<0.001).

5.3.4 Item 4/ Clothes choice: The score for item 4 (about the affect of the condition on choice of clothes) ranged from 0 to 2 (mean 0.93, median 1.00, SD 0.58). The score for this item ranged from 0 to 2. Among the new patients the score was (mean 1.19, median

1.00, SD 0.49). The mean score for this item among urban patients was 1.43 and among rural patients 1.13. There was statistically significant mean difference between the outreach sites (t=2.09, DF= 72, p value = 0.04) but there was no statistically significant differences by sex and age groups. The score for this item among treated patients was (mean 0.66, median 1.00, SD 0.56) and There was no statistically significant difference based on sex, age and outreach sites among treated patients. Of the overall 148 responses to this item, 31 (20.8%) scored 0, 97 (65.1%) scored 1, and 20 (13.4 %) scored 2. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -5.52, p<0.001).

5.3.5 Item 5/ Social Activities: The score for item 5, which concerned social activities, ranged from 0 to 3 (mean 0.89, median 1.00, SD 0.80). The score among new patients ranged from 0 to 3 (mean 1.42, median 1.00, SD 0.64).The score among treated patients ranged from 0 to 2 (mean 0.36, median 0.00, SD 0.56) There was no statistically significant difference based on age ,sex and out reach sites regarding this item both among new and patients. Of the overall 148 responses to this item 54 (36.3%) Scored 0, 58 (38.9%) scored 1, 34 (22.8 %) scored 2 and 2 (1.3%) scored 3. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -8.16, p<0.001).

Figure 2. Mean score of the 10 items of DLQI, Wolaita zone, 2007



5.3.6 Item 6/ Sport: The score for item 6, about the affect of the condition on ability to do sport ranged from 0 to 2 (mean 0.05, median 0.00, SD 0.30). The score for this item among new patients ranged from 0 to 2 (mean 0.08, median 0.00, SD 0.40), and among treated patients from 0 to 2 (mean 0.01, median 0.00, SD 0.12).Of the 148 responses to this item, 143 (96%) scored 0, 1 (0.7%) scored 1, and 3 (2%) scored 2. There was no statistically significant difference based on sex, age and outreach sites both among new and treated patients. The ranked mean difference test for this item between new and treated patients was not statistically significant (Z= -1.02, p=0.31).

5.3.7 Item 7/ Work and School: The score for item 7, about the affect on work and school, ranged from 0 to 3 (mean 0.94, median 1.00, SD 0.85). The score for this item among new patients ranged from 0 to 3 (mean 1.45, median 1.00, SD 0.79), and among treated patients, from 0 to 2 (mean 0.43, median 0.00, SD 0.55). The mean score for this item among urban patients was 1.93, and SD=0.73 and among rural patients the mean score was 1.33, and SD= 0.77. There was statistically significant difference in mean score

between the outreach sites among new patients (t=2.62, DF =72, p value = 0.01) but there was no statistically significant differences by sex and age groups in the same patient groups. There was no statistically significant difference based on sex, age and outreach sites among treated patients. Of the over all 148 responses to this item, 49 (32.9%) scored 0, 68 (45.6%) scored 1, 22 (14.8 %) scored 2 and 9 (6%) scored 3. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -7.51, p<0.001).

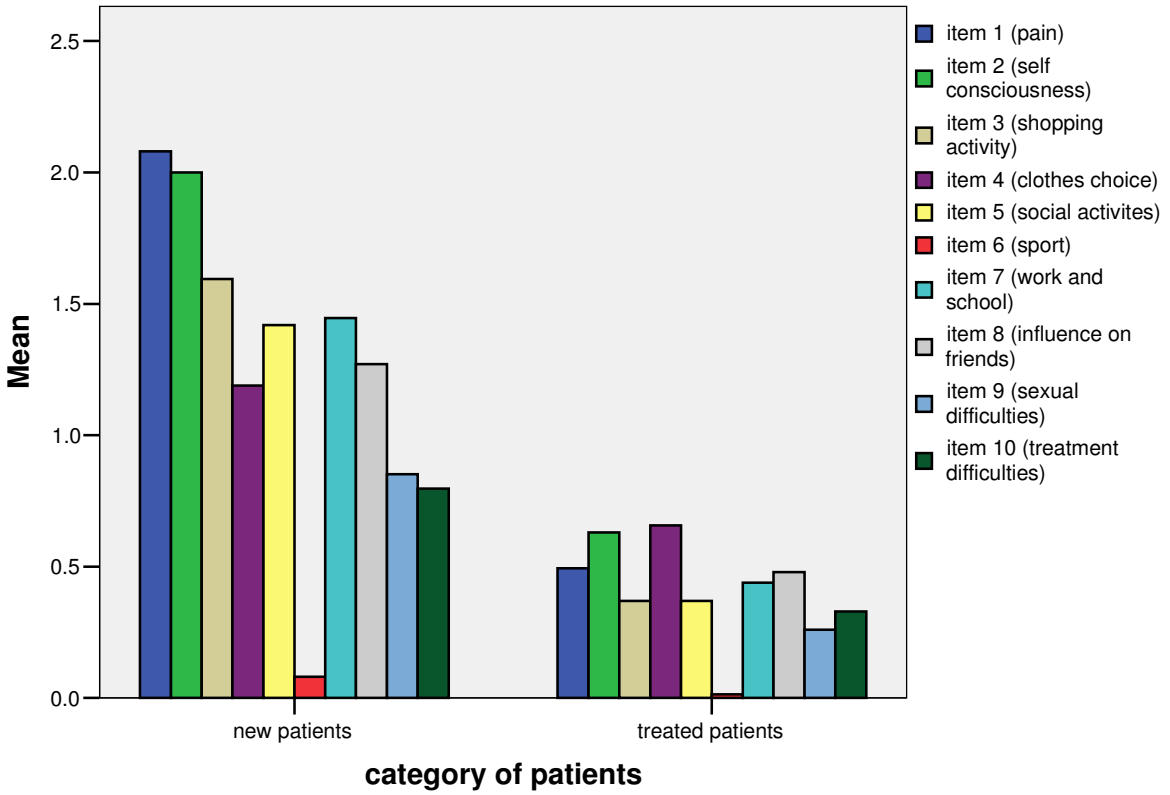
5.3.8 Item 8/ Close Friends: The score for item 8, the influence of the condition on close friends, ranged from 0 to 3 (mean 0.87, median 1.00, SD 0.67). The score for this item among new patients ranged from 0 to 3 (mean 1.27, median 1.00, SD 0.56), and among treated patients from 0 to 2 (mean 0.47, median 0.00, SD 0.53). The mean score for this item among urban patients was 1.57 and SD =0.52 and among rural patients the mean score was 1.20 and SD= 0.55. There was statistically significant difference in mean score between the outreach sites among new patients (t=2.32, DF=72, p value = 0.02) but there was no statistically significant differences by sex and age groups in the same patient groups. There was no statistically significant difference based on sex, age and outreach sites among treated patients. Of the over all 148 responses to this item, 83 (55.7%) scored 0, 50 (33.6%) scored 1, 13 (8.7%) scored 2 and 2 (1.3%) scored 3. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -7.31, p<0.001).

5.3.9 Item 9/ Sexual Difficulties: The score for item 9, concerning sexual difficulties, ranged from 0 to 3 (mean 0.55, median 0.00, SD 0.71). The score for this item among new patients ranged from 0 to 3 (mean 0.55, median 1.00, SD 0.75) and among treated patients from 0 to 2 (mean 0.26, median 0.00, SD 0.53).The mean score for this item among the new patients in the age group 17 to 24 were 0.48 SD= 0.65, in the age group 25 to 65 were 1.04, SD = 0.77 and in the age group > 65 were 1.00, SD = 1.00.There were statistically significant difference in mean score among the various age groups.(F= 5.12, DF = 2, P value = 0.008). Further analysis has showed that there was statistically significant difference in mean score between the age groups (17 to 24 and above 65) and (25 to 65 and above 65). There was no statistically significant difference

based on sex, and outreach sites among new patients. There was also no statistically significant difference based on sex, age and outreach sites among treated patients Of the overall 148 responses to this item 83 (55.7%) scored 0, 50 (33.6%) scored 1, 13 (8.7%) scored 2 and 2 (1.3%) scored 3. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -5.39, p<0.001).

5.3.10 Item 10/ Perceived Treatment Difficulties: The score for item 10, about difficulty with the treatment, ranged from 0 to 2 (mean 0.56, median 1.00, SD 0.56). The score for this item among new patients ranged from 0 to 2 (mean 0.8, median 1.00, SD 0.55) and among treated patients from 0 to 1 (mean 0.32, median 0.00, SD 0.47). Among treated patients the mean score for urban sites was 0.57 and SD= 0.51 and for rural sites the mean score was 0.27 and SD= 0.45. There was statistically significant difference between the out reach sites. (Z=-2.18, p value = 0.03).There was no statistically significant difference based on age and sex regarding this item among treated patient. There was no statistically significant difference based on age, sex and out reach sites regarding this item among new patients. Of the over all 148 responses to this item, 70 (47%) scored 0, 73 (49%) scored 1, and 5 (3.4%) scored 2. The ranked mean difference test for this item between new and treated patients was statistically significant (Z= -5.10, p<0.001).

figure 3. DLQI items mean score by category of patients, wolaita zone, 2007



5.4 Factor Analysis

Before performing factor analysis, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were calculated, to establish whether the sample was appropriate for factor analysis. for the new patients group The KMO value was 0.77, and Bartlett's test of sphericity was significant (X^2 = 206.48, DF = 45, p<0.001),and for the treated patients group The KMO value was 0.71, and Bartlett's test of sphericity was significant (X^2 = 18.62, DF = 45, p<0.001 both indicating that both samples were adequate and appropriate for factor analysis.

After performing principal component analysis among the new patients three components, items 1, 2, and 3 were found to have eigen values greater than 1, indicating

that these three items constituted the most important part of the DLQI score for both the new and treated patients groups in this setting.

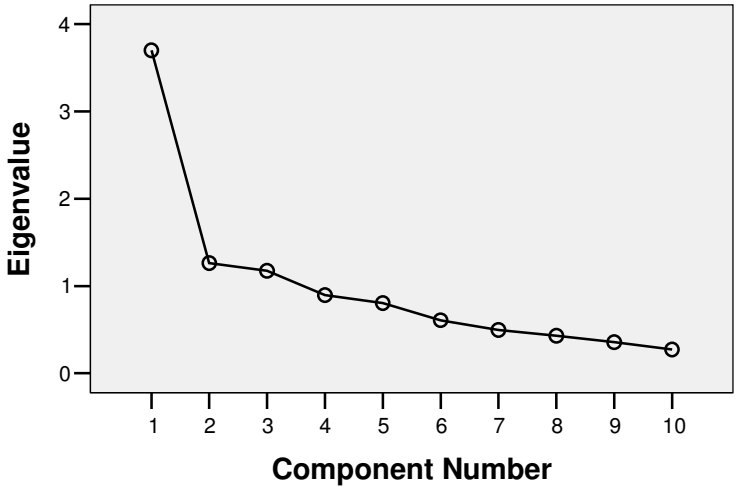
Table 6 Total variance explained by factor analysis among new patients Wolaita zone, SNNPR, 2007

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.700	36.998	36.998	3.700	36.998	36.998
2	1.263	12.630	49.628	1.263	12.630	49.628
3	1.174	11.737	61.366	1.174	11.737	61.366
4	.896	8.960	70.325			
5	.805	8.046	78.371			
6	.608	6.078	84.449			
7	.497	4.969	89.418			
8	.429	4.294	93.712			
9	.356	3.558	97.270			
10	.273	2.730	100.000			

Extraction Method: Principal Component Analysis.

In this analysis, the three items with eigen values greater than 1 together explained 61.37% of the variance. Examination of the scree plot also suggests that these three items were the most important in explaining the observed variability

figure 4 scree plot of the ten DLQI items among new patients Wolaita zone, SNNPR, 2007.



After performing principal component analysis among the treated patients three components, items 1, 2, and 3 were found to have eigen values greater than 1, indicating

that these three items constituted the most important part of the DLQI score for both the new and treated patients groups in this setting.

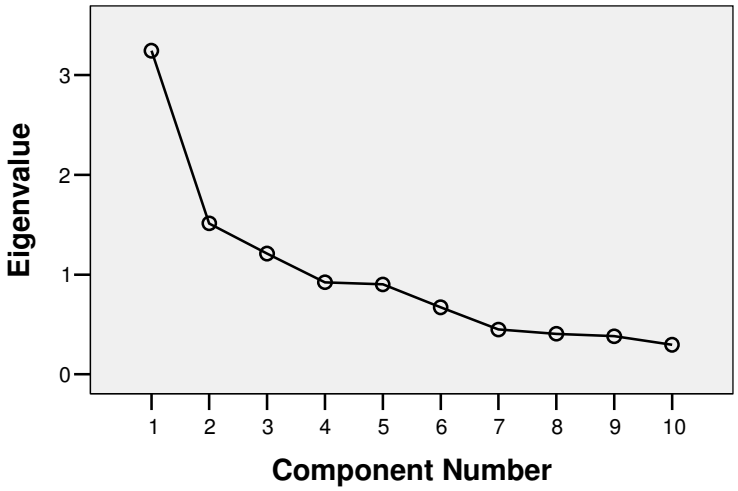
Table 7 Total variance explained by factor analysis among treated patients Wolaita zone, SNNPR, 2007.

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.245	32.446	32.446	3.245	32.446	32.446
2	1.514	15.141	47.587	1.514	15.141	47.587
3	1.211	12.107	59.694	1.211	12.107	59.694
4	.923	9.230	68.924			
5	.901	9.012	77.936			
6	.672	6.725	84.661			
7	.449	4.494	89.154			
8	.407	4.069	93.223			
9	.381	3.813	97.036			
10	.296	2.964	100.000			

Extraction Method: Principal Component Analysis.

In this analysis, the three items with eigen values greater than 1 together explained 59.69 % of the variance. Examination of the scree plot also suggests that these two items were the most important in explaining the observed variability

figure 5 Scree Plot of the ten DLQI items among treated patients wolait zone,SNNPR, 2007.



The inter-component correlation matrix was subjected to another round of principal component analysis to see whether higher order component (component of the

components) could be identified. Using the PCA, one component solution emerged for both categories of patients. This indicated that all the components could measure one single construct.

5.5 Validity and reliability analysis

5.5.1 Validity

5.5.1.1 Content validity. Preservation of content validity through the translation process was achieved by following standardized translation procedures set by the investigators who had originally developed the DLQI. Prof Andrew Finlay was consulted at each translation stage, and areas of difficulty in translation were reviewed by him.

5.5.1.2 Face validity: face validity of the Amharic version of the DLQI was assessed by the MFTPA workers and wolaita hospital staffs who are familiar with Podoconiosis. They have found that the Amharic version of DLQI have acceptable face validity

5.5.1.3 Concurrent validity: the ability of the test to distinguish between groups that theoretically it should distinguish between was fulfilled, in that the mean score of new and treated patients differed significantly.

5.5.2 Reliability

To assess the reliability of the DLQI instrument among Podoconiosis patients, internal consistency was measured. Three aspects of internal consistency were measured.

5.5.2.1 Average inter-item correlation: the average inter-item correlation is the average correlation between items, and was found to be 0.34 among new patients which is greater than 0.2 suggesting good reliability.

Table 8 Inter item Correlation Matrix of the ten DLQI items among new patients. Wolaita zone, SNNPR, 2007.

	item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
item 1 (pain)	1.000	.383	.471	.171	.285	.082	.388	.324	.140	.323
item 2 (self consciousness)	.383	1.000	.467	.333	.481	.163	.530	.496	.172	.326
item 3 (shopping activity)	.471	.467	1.000	.284	.439	.127	.505	.265	.015	.262
item 4 (clothes choice)	.171	.333	.284	1.000	.356	.061	.485	.213	.078	.248
item 5 (social activites)	.285	.481	.439	.356	1.000	-.135	.514	.254	.188	.245
item 6 (sport)	.082	.163	.127	.061	-.135	1.000	.317	.271	-.142	.076
item 7 (work and school)	.388	.530	.505	.485	.514	.317	1.000	.435	.135	.461
item 8 (influence on friends)	.324	.496	.265	.213	.254	.271	.435	1.000	.424	.182
item 9 (sexual difficulties)	.140	.172	.015	.078	.188	-.142	.135	.424	1.000	.059
item 10 (treatment difficulties)	.323	.326	.262	.248	.245	.076	.461	.182	.059	1.000

The covariance matrix is calculated and used in the analysis.

The average inter-item correlation was found to be 0.27 among treated patients which is greater than 0.2 suggesting good reliability.

Table 9 Inter item Correlation Matrix of the ten DLQI items among treated patients. Wolaita zone, SNNPR, 2007.

	item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
item 1 (pain)	1.000	.572	.573	.302	.435	-.097	.467	.206	.202	-.089
item 2 (self consciousness)	.572	1.00	.359	.370	.336	.248	.415	.118	.202	-.050
item 3 (shopping activity)	.573	.359	1.000	.264	.459	-.074	.306	.225	.222	.056
item 4 (clothes choice)	.302	.370	.264	1.000	.407	.073	.178	.046	.024	.064
item 5 (social activites)	.435	.336	.459	.407	1.000	-.078	.408	.420	.185	.162
item 6 (sport)	-.097	.248	-.074	.073	-.078	1.00	-.094	-.107	-.059	-.082
item 7 (work and school)	.467	.415	.306	.178	.408	-.094	1.000	.363	.223	-.028
item 8 (influence on friends)	.206	.118	.225	.046	.420	-.107	.363	1.000	.144	.083
item 9 (sexual difficulties)	.202	.202	.222	.024	.185	-.059	.223	.144	1.000	.487
item 10 (treatment difficulties)	-.089	-.050	.056	.064	.162	-.082	-.028	.083	.487	1.000

The covariance matrix is calculated and used in the analysis.

5.5.2.2 Average item total correlation: this value ranged from 0.148-0.720 among the new patients. Only item 6 (about sport) had a value less than 0.2. The average item total correlation was 0.47 suggesting that the instrument has good reliability in this setting.

Table 10 Item-Total Correlation Matrix of the ten DLQI items among new patients Wolaita zone, SNNPR, 2007.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
item 1 (pain)	10.65	12.094	.490	.309	.775
item 2 (self consciousnes s)	10.73	10.419	.649	.464	.752
item 3 (shopping activity)	11.14	11.762	.545	.407	.768
item 4 (clothes choice)	11.54	12.937	.425	.262	.783
item 5 (social activites)	11.31	11.916	.528	.449	.770
item 6 (sport)	12.65	14.067	.148	.310	.804
item 7 (work and school)	11.28	10.343	.720	.613	.740
item 8 (influence on friends)	11.46	12.197	.556	.454	.769
item 9 (sexual difficulties)	11.88	13.012	.200	.266	.813
item 10 (treatment difficulties)	11.93	12.749	.413	.254	.784

The average item- total correlation value ranged from -0.41-0.62 among the treated patients. Item 6 (about sport) and item ten about treatment difficulties had a value less than 0.2. The average item total correlation was 0.39 suggesting that the instrument has good reliability in this setting.

Table 11 Item-Total Correlation Matrix of the ten DLQI items among treated patients. Wolaita zone, SNNPR, 2007

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
item 1 (pain)	3.55	6.612	.602	.557	.698
item 2 (self consciousness)	3.41	6.634	.527	.491	.710
item 3 (shopping activity)	3.67	6.835	.540	.392	.709
item 4 (clothes choice)	3.38	7.434	.361	.261	.737
item 5 (social activites)	3.67	6.724	.615	.453	.697
item 6 (sport)	4.03	8.860	-.041	.175	.762
item 7 (work and school)	3.60	7.048	.509	.362	.715
item 8 (influence on friends)	3.56	7.611	.326	.247	.741
item 9 (sexual difficulties)	3.78	7.590	.336	.342	.740
item 10 (treatment difficulties)	3.71	8.291	.121	.325	.765

5.5.2.3 Cronbach's alpha was calculated as the third estimate of reliability. The overall alpha value was found to be 0.78 and the standardized item alpha to be 0.79 among new patients and The overall alpha value was found to be 0.75 and the standardized item alpha to be 0.71 among treated patients, in both cases the values were higher than the traditional cut-off point of 0.7, again suggesting the DLQI instrument to be reliable in this setting.

6. Discussion

Quality of life in dermatology has been measured for clinical, research, political and financial purposes. Health-related quality of life measures have recently been used as outcome measure in addition to clinical outcomes in dermatology. [6]

It may be very important to develop disease-specific and country-specific instruments but to develop a tool for every condition is not feasible and practical. Using a very general quality of life measurement may also dilute the outcome of interest in a specific disease. These facts have lead to the development of the Cardiff DLQI which addresses these problems and gives the opportunity to make cross-cultural comparisons of the potential effects of internationally accepted treatment models in the field of dermatology. [27]

The DLQI questionnaire is a well-known and widely-used area-specific and dermatology-specific HRQOL instrument developed in the UK for measuring the effects of various dermatological disorders on patients' HRQOL. [27]

In this study, the questionnaire was administered by interviewers because most of the patients were unable to read and write [40]. In this respect, the study differs from those in which self-completion has been used.

The mean DLQI score of the over all studied Podoconiosis patients was 8.42, which is comparable to other studies by Finlay and Khan [7]. A range of mean DLQI scores have been reported in relation to different diseases: among patients with vitiligo, 7.5; psoriasis 8.9; pruritus 10.5; a topic eczema 12.5; viral warts 6.7, and (using DLQI modified to reflect the leg rather than the whole skin) filarial lymph edema 8.0 [32].

The mean DLQI for new patients ranged from 4 to 21 (mean 12.76,) and those for treated patients ranged from 1 to 18 (mean 4.08). The difference was statistically significant; suggesting that the intervention offered to patients by the MFTPA improves the quality of life of the patients. However, this was a comparative cross-sectional study, and without a follow-up study, it is not possible to definitely ascribe these differences to MFTPA activities. A follow-up study among psoriasis patients showed an improvement of mean DLQI from 13.7 to 6.7 after intervention. [21]

There was no statistically significant difference in DLQI score based on sex, age or outreach site. In contrast to other studies, women had slightly lower scores than men. It is not clear what lies behind this, but it may reflect that rural Ethiopian women are not used to expressing their problems.

Individual DLQI item scores did not differ statistically by sex among new patients. The lowest score was for the item asking about interference with sport, while the highest score was for the item concerning feeling self consciousness, signifying the psychological trauma of Podoconiosis. A study that was done in Turkey among general dermatological patients also recorded highest scores for items one and two (pain and self-consciousness). These aspects of concern to the patient are often neglected by traditional out come measures. This finding will help us to better understand the impact of the disease and will add a valuable extra perspective in our evaluation of Podoconiosis patients.

All items except item 6 (sport) showed a statistically significant difference between the two categories (new and treated patients). A study done among psoriasis patients showed that most individual DLQI items distinguished patients with varying degrees of overall QOL impairment. [21]

Among the new patients Item 4, 7, and 8 showed statistically significant differences between the out reach sites. Item 4 which deals with clothes choice, and item 8 which are assesses the influence of the condition on close friends and item 7 which assesses the influence of the condition on work and school had higher mean score among urban residents. It is not clear what lies behind this but it is believed that on such matters rural people are less likely to perceive and expresses there views. In addition to this the education level also varies between urban and rural areas thus affecting the influence of the condition on this item.

Among the treated patients Item 1 (about pain) showed statistically significant differences by sex males had higher score than females. Item 2 (about self consciousnesses) showed statistically significant differences among the age groups the age group 17 to 24 had higher score in the treated patients' category. Item 10 (about perceived treatment difficulties) showed statistically significant differences among the out reach sites in the treated patients category patients from urban outreach sites had higher score among the rural sites this may be explained by the fact that people from urban and rural areas may differ in their level of perception and expression of the treatment difficulties.

Item 9 (about sexual difficulties) showed statistically significant differences between the age groups among new patients the age group 25 to 65 had the highest score ad the age group 17 to 24 had the lowest score. This difference may be explained by the fact that patients in the various age groups may vary in their sexual practices and thus can have different scores.

The item with the highest score among new patients was item 1 (pain), while that for treated patients was item 4 (clothes choice). It would appear that pain is a symptom that can be controlled relatively easily with simple foot hygiene management, and become less of a problem for treated patients. For treated patients, many issues improve including pain and self-consciousness, but because complete reversal of lymph edema is rarely achieved, wearing 'normal' footwear may not be achieved, leading to some residual stigma.

The concurrent, content and translation validity of the instrument has shown that the DLQI is a valid instrument. Only item 6 (sport) was questioned during the content validation step and indeed there was no observed benefit of incorporating this item beyond maintaining the uniformity of the instrument.

Reliability of the DLQI instrument was assessed using Cronbach's alpha, inter item correlation and item total correlation. The Cronbach's alpha value was 0.78 among new patients and 0 .75 among treated patients, and in fact it is greater than the traditional cut-off point of 0.7, suggesting the DLQI instrument is highly internally reliable. The average inter-item correlation was found to be 0.34; only items 5 versus 6 and 9 versus 6 had correlations less than 0.2 among new patients and among treated patients The average inter-item correlation was found to be 0.27 both suggests that the instrument is reliable.

The DLQI has been used in other developing countries in relation to vitiligo, acne and atopic dermatitis and to common skin diseases in South Africa and Tanzania. A study conducted in Guyana showed that the DLQI was an appropriate tool to assess how limb lymph edema affected patient quality of life and in particular to monitor an intervention that concentrated on skin care treatment. [42]

This study has shown that the DLQI instrument can be used among Podoconiosis patients in the study context. Firstly, it was feasible to use the DLQI to measure quality of life among these patients. The patients found it acceptable, and the average time taken to complete the questionnaire was around 5 minutes. Secondly, the DLQI demonstrated an ability to detect meaningful changes after treatment. A mean difference of 8.5 between new and treated patients was measured, which is considerably greater than the conventional difference of 5 or more [5].

This study has demonstrated that the DLQI is quick and easy to administer to large numbers of patients in a rural setting in Ethiopia with low literacy levels. A valid and reliable quality-of-life measure such as the DLQI has significant potential to aid both clinical and policy decisions in dermatology, because measurement of patient-rated quality of life provides access to patients' perceptions of their health, and helps to give a more comprehensive account of the overall impact of skin disease.

In the future DLQI can be used among Podoconiosis to assess their quality of life before and after surgery, in day to day patient evaluation, follow up of patients, compare treatment options and sites and still there are many more potential uses.

7. STRENGTHS AND LIMITATIONS

7.1 Strengths

- A structured, previously validated instrument (the DLQI) was adapted and used.
- The researcher who developed the DLQI tool originally was involved in its translation and adaptation.

7.2 Limitations

- The performance of the Amharic DLQI against different levels of disease severity and treatment durations was not tested.

- The narrow scope of the study area and population may limit generalizability
- Resource restrictions meant the study had to be cross-sectional. A cohort study would demonstrate improvement in QOL with treatment more clearly.

8. CONCLUSIONS

It was found that the Amharic version of the DLQI was an acceptable instrument for measuring the quality of life of Podoconiosis patients in the study settings. Age, sex, and outreach sites didn't affect the quality of life but category of patient affected the overall DLQI score. Item 4, 7, and 8 were affected by outreach sites among new patients, similarly item 9 is affected by age among new patients. Item 1 was affected by sex, item 2 was affected by age and item 10 were affected by outreach sites among treated patients. Comparison of two groups of patients that is new and treated patients by the MFTPA foot program has showed that those treated patents had better quality of life suggesting that a three or more month treatment By MFTPA is associated with a change in quality of life patients.

A significant proportion of the study subjects experienced pain and embarrassment about the condition. Local pain is a much more common and dominant characteristic among

new Podoconiosis patients. Among the treated patients close choice option had a high score showing how the change in body image affects the person. These results provide an indication of the magnitude of the psychological impact of the disease, thus psychological support should be further strengthened in the treatment.

DLQI questionnaire is relatively quick and easy to administer, it may be incorporated in a routine clinic setting with ease, enabling clinicians to identify problem areas for each patient. In places where there is shortage of trained professional, even it can be scored by non professional persons with short term training the instrument is short and easy to administer to large numbers of patients. A valid and reliable quality-of-life measure such as the DLQI has significant potential to aid both clinical and policy decisions in dermatology. This kind of out come measure will add a patient perspective and hence it may help to give a more comprehensive and holistic understanding of the impact and the progress of the condition. This study contributes to building evidence of validity for the DLQI, because the instrument demonstrated the ability to compare and detect meaningful changes in clinical status over time.

Measuring quality of life as an out come indicator for chronic illness like Podoconiosis has paramount significance. There is considerable potential for measurements like DLQI to be of value in informing clinical decisions, especially in this era where we are facing double tragedy of infectious and non infectious diseases.

DLQI instrument have been found to be valid, reliable, and clinically useful outcome measure for assessing QOL in Podoconiosis patients.

9. Recommendations

Based on the findings of this study it was found that the DLQI instrument is a valid, reliable, and clinically useful outcome measure for assessing QOL in Podoconiosis patients in the rural Ethiopian setting. Based on this, the following recommendations are made:

1 To clinicians.

As the DLQI questionnaire is relatively quick and easy to administer, clinicians and other personnel practicing dermatology among Podoconiosis patients should incorporate this DLQI tool as an additional outcome measure.

2 To researchers.

Although the DLQI instrument has been translated and validated in a number of conditions and languages it should still be assessed in more settings and skin conditions. A follow-up study should be performed to assess changes in DLQI among Podoconiosis patients on treatment.

3 To MFTPA foot program

The activities that are being run by the program appear to be associated with better quality of life among patients, so the MFTPA should be encouraged to strengthen these activities.

4 To the Federal Ministry of Health

This research underscores the social and psychological burden imposed by Podoconiosis, a condition which is still neglected by the Ministry of Health. Attention should be drawn to the apparent effects of the MFTPA activities on quality of life among Podoconiosis patients, and resources made available to the MFTPA to continue and expand these activities.

10. REFERENCES

1. Price EW, Henderson WJ. Endemic Elephantiasis of the lower legs in the United Cameroon Republic. *Trop Geogr Med.* 1981; 33:23-29.

2. Price EW. Podoconiosis: *non-filarial elephantiasis*. Oxford University Press, 2001.

3. Destas K, Ashine M, Davey G. Prevalence of Podoconiosis (endemic non filarial elephantiasis) in Wolaitta, Southern Ethiopia. *Trop Doc.* 2002; 32: 217-220.

4. WHOQOL GROUP. The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. *Soc Sci Med.* 1995; 41:1403-1409.

5. Finlay AY. Quality of life indices. *Indian J Dermatol Venereol Leprol.* 2004;70:143-148

6. Hongbo Y, Thomas C L, Harrison M A, Salek M S, Finlay A Y. Translating the Science of Quality of Life into Practice: What Do Dermatology Life Quality Index Scores Mean? *J Invest Dermatol.* 2005;125:659-664.

7. Shahin A Manouchehrs Peyman J, Nazila M and Anderew Y Finalay DLQI scores in vitiligo: reliability and validity of the Persian version version. *BMC Dermatolo. 2004*;4:8-16

8. Price EW. The pathology of non-filarial elephantiasis of the lower legs. *Trans R Soc Trop Med Hyg.* 1972; 66 (1):150-159.

9. Price EW. Non-filarial elephantiasis-confirmed as a geochemical disease and renamed Podoconiosis. *Ethiop Med J.* 1988;26:151-153

10. Price EW, Frommel D. Podoconiosis (endemic non-filarial elephantiasis). In:

Kloos H, Ahmed Zein Z, eds. *The ecology of health and disease in Ethiopia*.

Addis Ababa.1993; 449-454.

11. Price EW. The relationship between endemic elephantiasis of the lower legs and the local soils and climate. A study in Wollamo District, Southern Ethiopia. *Trop Geogr Med.*1974; 26:225-230.

12. Price EW, Bailey D. Environmental factors in the etiology of endemic elephantiasis of the lower legs in Tropical Africa. *Trop Geogr Med.* 1984; 36:1-5

13. Price EW. The elephantiasis story. *Trop Dis Bull.* 1984;81(8): 1-11.

14. The surgery of leprosy. Podoconiosis (non-filarial endemic elephantiasis of the lower legs). *Primary Surgery*: *Non-trauma*; 2000:1:30-31

15. Price EW. Non-filarial elephantiasis of the lower legs in Ethiopia: a simple Method for rapid survey by school enquiry. *Trop Geogr Med.*1973;25:23-27.

16. Kelemu D, Meskele A, Gail D. Predictive value of clinical assessment of patients with podoconiosis in an endemic community setting. *Trans R Soc Trop Med Hyg.*2007;101:6:621-23

17. Tekola F, Davey G, Hailemariam D.Economic costs of Podoconiosis in wolaita zone, southern Ethiopia. *Trop Med Int health.* 2006; 11:1136-1144.

18. Price EW. Endemic elephantiasis of the lower legs in Rwanda and Burundi.

Trop Geogr Med. 1976; 28:283-290.

19. Geberamlak E. (2005) the social burden of Podoconiosis, in wolaita zone, southern nations nationalities people, Ethiopia . *MPH thesis* AAU_MF

20. Lundberg L, Johannesson M, Silverdahi M, Hermansson C , Lindberg M. Quality of life, health sate utilities and willingness to pay in patients with psoriasis and a topic eczema. *Br J dermatol.*1999:141:1067-1075

21. Finlay AY, Khan GK, Luscombe DK. Validation of sickness impact profile and psoriasis disability index in psoriasis. *Br J Dermatol.* 1990; 123: 751–756.

22. Jobanputra R, Bachmann M. the effect of skin diseases on quality of life in patients from different social and ethnic groups in cape town, south Africa . Int J Dermatol. 2000; 39(11) :826-831

23. Babu BV, Nayak AN , Rath K, and Kerketta AS. Use of the dermatology life quality index in filarial lymph edema patients *Trans R Soc Trop Med Hyg.*2006;100;258-263

24. Chren MM., Lasek RJ, Quinn LM, Mostow EA., Zynanski SJ. A Quality of life measure for patients with skin dieases :Realibility, validity and responsivness. *J Inves Derm.* 1996;107:707-713

25. Detiedra AG, Mercadal J, Badia X, Mascaro JM, Lozano R. Method to select an instrument for measurement of HR-QOL for cross-cultural adaptation applied to dermatology . *Phrarmacoeconomics.* 1998;14(4):405-22.

26. Morgan MR, simpson J, Hay RJ. Dermatology quality of life scales, a measure of the impact of skin diseases. *Br J Dermatol.*1997;136: 202-206

27. Finlay AY, Lewis V L. Ten years experience of the Dermatology Life Quality Index (DLQI) *J Investig Dermatol Symp Proc.* 2004;9(2):169-180.

28. Finlay AY , Khan GK. Dermatology Life Quality Index (DLQI): A simple practical measure for routine clinical use. *Clin Exp Dermatol.* 1994: 19: 210-216.

29. Finlay AY, Khilji FA, Gonzalez M. clinical meaning of change in dermatology life quality index scores. *Br J Dermatol.* 2002 ;147:50-62

30. Lennox RD. Validation of the dermatology life quality index as an outcome measure of quality of life for urticaria patients *Ann allergy Astma Immunol*. 2004;93:142-146

31. Mazzotti E , Picardi F, sera F, P.Pasquini, Abeni D. The sensitivity of the DLQI to clinical change in patents with psoriasis *Br J Dermatol.* 2003;149:318-320

32. Chandrasena T.G.A.N, premaratna R, mutugala M.A.R.V ,pathmeswaran A, De silva N.R. Modified dermatology life quality index as a measure of quality of life in patients with filarial lymph edema. *Trans R Soc Trop Med Hyg*. 2007; 101: 245-49

33. Ozutukcan S ,Aylin S , Ermertcan T, Eser E, Mustafa TS. Cross validation of the Turkish version of the DLQI. *Int J Dermatol.* 2006; 45: 1300-1307

34. Robert Z, Claus Z, Hans I, Toubug MJ, Wulf HC. Dermatology Life Quality Index: Data from Danish In patients and Outpatients. *Acta Dermato Venerelogica*. 2000;80:272-76

35. Takahashi N, Suzukamo Y, Nakamura M, Miyachi Y ,Green J, Ohya Y, Finlay AY, Japanese version of the Dermatology Life Quality Index: validity and reliability in patients with acne. *Health Qual Life Outcomes.* 2006;4: 46-49

36. Yahathugoda TC, wicckramasinghe D, weerasoriya MV, samara WA, Wickrema W. Lymphoedema and it`s management in cases of lymphatic filariasis

: the current situation in three suburbs of Matara, sirilanka, before the introduction of a morbidity – control program . *Ann trop med parasitol.* 2005; 99: 501-10

37. Federal Democratic Republic of Ethiopia. Office of Population and Housing Census Commission.Central Statistics Authority. *The 1994 Population and Housing Census of Ethiopia. Results at Country Level. Volume I Statistical Report. Addis Ababa.* 1998:1

38. Health Information Processing and Documentation Team Planning and Programming Department: Federal Democratic Republic of Ethiopia. Ministry of Health. *Health and health related indicators* 1995 E.C

39. SNNPR. *Health profile of Wolaita zone*, 2002.

40. Ethiopia DHS final report 2005

41. Bland M. *an introduction to medical statistics* 3 rd edition 2005

42. Mcpherson T. Impact on the quality of life of lymphoedema. Following introduction of a hygiene and skin care regimen in a Guyanese community endemic for lymphatic filariasis: A preliminary clinical intervention study. *Filaria J.* 2003; 2:10-15

CONSENT FORM

My name is _____. I am working with the research team of Addis Ababa University. Here in Wolaita zone we are interviewing people to Measure the quality of life of people with Podoconiosis. We believe that this study would help to bring about practical changes on the problems related to the disease. We would like to assure you that your name will not be mentioned in this form and the information that you give us will be kept confidential. You have full right to; to take part or to interrupt the interview at any time and your participation or non participation will not affect your treatment. But the information that you give us would be quite useful for the study. The interview will roughly take ten minutes. Are you willing to participate in the interview of this study?

1. Yes

2. No

Signature of the respondent which shows that the respondent has consented to

DERMATOLOGY LIFE QUALITY INDEX

DLQ

Hospital No: **Date:** **Score:**

Name: **Diagnosis:**

Address:

The aim of this questionnaire is to measure how much your skin problem has affected your life OVER THE LAST WEEK. Please tick one box for each question.

1.	Over the last week, how **itchy**, **sore**, **painful** or **stinging** has your skin been?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	
2.	Over the last week, how **embarrassed** or **self conscious** have you been because of your skin?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	
3.	Over the last week, how much has your skin interfered with you going **shopping** or looking after your **home** or **garden?**	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
4.	Over the last week, how much has your skin influenced the **clothes** you wear?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
5.	Over the last week, how much has your skin affected any **social** or **leisure** activities?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
6.	Over the last week, how much has your skin made it difficult for you to do any **sport**?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
7.	Over the last week, has your skin prevented you from **working** or **studying**?	yes no	☐ ☐	Not relevant ☐
	If "No", over the last week how much has your skin been a problem at **work** or **studying**?	A lot A little Not at all	☐ ☐ ☐	
8.	Over the last week, how much has your skin created problems with your **partner** or any of your **close friends** or **relatives**?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
9.	Over the last week, how much has your skin caused any **sexual difficulties**?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
10.	Over the last week, how much of a problem has the **treatment** for your skin been, for example by making your home messy, or by taking up time?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐

Please check you have answered EVERY question. Thank you.

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DERMATOLOGY LIFE QUALITY INDEX: AMHARIC VERSION

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Annex III

Table III 1: the mean score of the ten DLQI items by sex among new patients Wolaita zone, 2007

sex		item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
male	N	45	45	45	45	45	45	45	45	45	45
	Mean	2.00	1.89	1.62	1.16	1.38	.13	1.49	1.22	.82	.76
	Std. Deviation	.707	.885	.716	.475	.716	.505	.895	.517	.747	.529
female	N	29	29	29	29	29	29	29	29	29	29
	Mean	2.21	2.17	1.55	1.24	1.48	.00	1.38	1.34	.90	.86
	Std. Deviation	.491	.759	.572	.511	.509	.000	.622	.614	.772	.581
Total	N	74	74	74	74	74	74	74	74	74	74
	Mean	2.08	2.00	1.59	1.19	1.42	.08	1.45	1.27	.85	.80
	Std. Deviation	.636	.844	.660	.488	.641	.397	.796	.556	.753	.548

Table III 2: the mean score of the ten DLQI items by outreach sites among new patients Wolaita zone, 2007

out reach sites		item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
urban	N	14	14	14	14	14	14	14	14	14	14
	Mean	2.07	2.14	1.64	1.43	1.57	.14	1.93	1.57	1.14	1.00
	Std. Deviation	.616	.949	.633	.514	.514	.535	.730	.514	.949	.392
rural	N	60	60	60	60	60	60	60	60	60	60
	Mean	2.08	1.97	1.58	1.13	1.38	.07	1.33	1.20	.78	.75
	Std. Deviation	.645	.823	.671	.468	.666	.362	.774	.546	.691	.571
Total	N	74	74	74	74	74	74	74	74	74	74
	Mean	2.08	2.00	1.59	1.19	1.42	.08	1.45	1.27	.85	.80
	Std. Deviation	.636	.844	.660	.488	.641	.397	.796	.556	.753	.548

Table III 3: the mean score of the ten DLQI items by age groups among new patients Wolaita zone, 2007

			item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
age groups	17-24	Mean	N=2.08	N=2.28	N=1.60	N=1.28	N=1.20	N=.24	N=1.48	N=1.32	N=.48	N=.80
		Std Deviation	N=.57	N=.89	N=.65	N=.54	N=.65	N=.66	N=.87	N=.63	N=.65	N=.58
		N	N=25	N=25	N=25	N=25	N=25	N=25	N=25	N=25	N=25	N=25
		Median	N=2.00	N=3.00	N=2.00	N=1.00	N=1.00	N=.00	N=1.00	N=1.00	N=.00	N=1.00
	26-65	Mean	N=2.07	N=1.84	N=1.56	N=1.11	N=1.51	N=.00	N=1.36	N=1.22	N=1.04	N=.80
		Std Deviation	N=.65	N=.80	N=.66	N=.44	N=.63	N=.00	N=.65	N=.52	N=.77	N=.55
		N	N=45	N=45	N=45	N=45	N=45	N=45	N=45	N=45	N=45	N=45
		Median	N=2.00	N=2.00	N=1.00	N=1.00	N=1.00	N=.00	N=1.00	N=1.00	N=1.00	N=1.00
	above 65	Mean	N=2.25	N=2.00	N=2.00	N=1.50	N=1.75	N=.00	N=2.25	N=1.50	N=1.00	N=.75
		Std Deviation	N=.96	N=.82	N=.82	N=.58	N=.50	N=.00	N=1.50	N=.58	N=.00	N=.50
		N	N=4	N=4	N=4	N=4	N=4	N=4	N=4	N=4	N=4	N=4
		Median	N=2.50	N=2.00	N=2.00	N=1.50	N=2.00	N=.00	N=3.00	N=1.50	N=1.00	N=1.00

Table V4: the mean score of the ten DLQI items by sex groups among treated patients Wolaita zone, 2007

sex		item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
male	N	35	35	35	35	35	34	35	35	35	35
	Mean	.69	.74	.46	.60	.37	.03	.49	.54	.29	.26
	Std. Deviation	.583	.741	.611	.604	.598	.171	.507	.561	.519	.443
female	N	39	39	39	39	39	39	39	39	39	39
	Mean	.33	.54	.28	.72	.36	.00	.38	.41	.23	.38
	Std. Deviation	.577	.555	.560	.510	.537	.000	.590	.498	.536	.493
Total	N	74	74	74	74	74	73	74	74	74	74
	Mean	.50	.64	.36	.66	.36	.01	.43	.47	.26	.32
	Std. Deviation	.603	.653	.587	.556	.563	.117	.551	.529	.525	.471

Table V5: the mean score of the ten DLQI items by outreach sites among treated patients Wolaita zone, 2007

out reach sites		item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
urban	N	14	14	14	14	14	14	14	14	14	14
	Mean	.50	.86	.29	.86	.57	.00	.57	.50	.43	.57
	Std. Deviation	.650	.770	.611	.663	.756	.000	.756	.519	.756	.514
rural	N	60	60	60	60	60	59	60	60	60	60
	Mean	.50	.58	.38	.62	.32	.02	.40	.47	.22	.27
	Std. Deviation	.597	.619	.585	.524	.504	.130	.494	.536	.454	.446
Total	N	74	74	74	74	74	73	74	74	74	74
	Mean	.50	.64	.36	.66	.36	.01	.43	.47	.26	.32
	Std. Deviation	.603	.653	.587	.556	.563	.117	.551	.529	.525	.471

Table V6: the mean score of the ten DLQI items by age groups among treated patients Wolaita zone, 2007

			item 1 (pain)	item 2 (self consciousness)	item 3 (shopping activity)	item 4 (clothes choice)	item 5 (social activites)	item 6 (sport)	item 7 (work and school)	item 8 (influence on friends)	item 9 (sexual difficulties)	item 10 (treatment difficulties)
age groups	17-24	Mean	N=.40	N=.85	N=.35	N=.75	N=.25	N=.05	N=.45	N=.40	N=.30	N=.35
		Std Deviation	N=.60	N=.67	N=.59	N=.55	N=.55	N=.22	N=.60	N=.50	N=.57	N=.49
		N	N=20	N=20	N=20	N=20	N=20	N=20	N=20	N=20	N=20	N=20
		Median	N=.00	N=1.00	N=.00	N=1.00	N=.00	N=.00	N=.00	N=.00	N=.00	N=.00
	26-65	Mean	N=.58	N=.60	N=.36	N=.66	N=.44	N=.00	N=.44	N=.52	N=.26	N=.32
		Std Deviation	N=.61	N=.64	N=.60	N=.56	N=.58	N=.00	N=.54	N=.54	N=.53	N=.47
		N	N=50	N=50	N=50	N=50	N=50	N=49	N=50	N=50	N=50	N=50
		Median	N=1.00	N=1.00	N=.00	N=1.00	N=.00	N=.00	N=.00	N=.50	N=.00	N=.00
	above 65	Mean	N=.00	N=.00	N=.50	N=.25	N=.00	N=.00	N=.25	N=.25	N=.00	N=.25
		Std Deviation	N=.00	N=.00	N=.58	N=.50	N=.00	N=.00	N=.50	N=.50	N=.00	N=.50
		N	N=4	N=4	N=4	N=4	N=4	N=4	N=4	N=4	N=4	N=4
		Median	N=.00	N=.00	N=.50	N=.00	N=.00	N=.00	N=.00	N=.00	N=.00	N=.00