3.1 SUBJECTS

Data were collected on clinically diagnosed (by dermatologist) 150 psoriatic patients visiting skin OPD’s of various Dermatology Departments of Government Hospitals and Medical Colleges of North India and 200 age and gender matched healthy controls after taking written consent from them. Ethical clearance was obtained from Institutional Clinical Ethical Committee (ICEC), Punjabi University, Patiala vide number ICEC/2/2011.

3.2 INCLUSION - EXCLUSION CRITERIA

3.2.1 Cases

3.2.1.1 Inclusion Criteria

- Freshly diagnosed psoriatic patient (prior to treatment).
- Psoriatic patient which undergone off treatment for topical (for two weeks), systemic and phototherapy (for four weeks).

3.2.1.2 Exclusion Criteria

- Patient takes any treatment (allopathic, ayurvedic, homeopathic) for psoriasis.
- Psoriatic Patient who was suffering from any other coexistent autoimmune disorders, acute or chronic infections, and malignancies.
- Psoriatic Patient who was not willing to take part in the study.

3.2.2 Controls

3.2.2.1 Inclusion Criteria

- Individuals who were matched with cases by age and gender.
- Individuals not suffering from any autoimmune disorders, acute or chronic infections, and malignancies

3.2.2.2 Exclusion Criteria

- Individuals suffering from any autoimmune disorders, acute or chronic infections, and malignancies.
- Individuals not willing to take part in the study.
3.3 **EQUIPMENTS**

1. ELx800 Elisa Reader (Biotek Instruments, Inc.) with computer attachment
2. Deep Freezer -20° C (Celfrost) and -80° C (New Brunswick Scientific Co., Inc.)
3. ERBA 5 CHEM X Biochemistry Auto analyzer (Transasia Bio-Medicals Ltd.)
4. Micro Pipettes (Eppendorf Germany)
5. Spinwin-MC-OO (Tarsons)
6. 100 ml and 1 liter graduated cylinders
7. Tubes to prepare standard or sample dilutions
8. Centrifuge

3.4 **CHEMICALS AND REAGENTS**

3.4.1 **Chemicals and reagents for ELISA**

ELISA kits (Ray Biotech, Inc.) contain the followings

1. IL-17, IL-20 and IL-22 Microplate (Item A): 96 wells (12 strips x 8 wells) coated with anti-human IL-17, IL-20 and IL-22 respectively.
2. Wash Buffer Concentrate (20x) (Item B): 25 ml of 20x concentrated solution.
3. Standards (Item C): 2 vials, recombinant human IL-17, IL-20 and IL-22.
4. Assay Diluent A (Item D): 30 ml of animal serum with 0.09% sodium azide as preservative. For Standard/Sample (serum/plasma) diluent.
6. Detection Antibody IL-17, IL-20 and IL-22 (Item F): 2 vial of biotinylated anti-human IL-17, IL-20 and IL-22 (each vial is enough to assay half microplate).
7. HRP-Streptavidin Concentrate (Item G): 200 μl of 120x concentrated HRP-conjugated streptavidin.
8. TMB One-Step Substrate Reagent (Item H): 12 ml of 3, 3’, 5, 5’ tetramethylbenzidine (TMB) in buffered solution.
9. Stop Solution (Item I): 8 ml of 0.2 M sulfuric acid.
10. Distilled or deionized water.
3.4.2 Chemicals and reagents for Lipid Profile (Kamineni Life Sciences Pvt. Ltd.)

1. Enzyme Reagent for total cholesterol, HDL cholesterol and triglycerides.
2. Precipitating Reagent for total cholesterol and HDL cholesterol.
3. Standards for total cholesterol, HDL cholesterol and triglycerides.

3.5 COLLECTION OF BLOOD SAMPLES

Blood samples were collected from 150 psoriatic patients and 200 healthy controls after written consent. Three millilitres (3 ml) of peripheral blood was collected from each subject in sterile BD Vacutainer plane vials with the help of laboratory technician. After the collection, blood samples were transported to Department of Human Genetics, Punjabi University, Patiala in an ice box. Serum was separated by centrifugation at 3000 rpm for 10 minutes and stored at -80°C for further analysis.

3.6 METHODS

3.6.1 Enzyme Linked Immunosorbent Assay (ELISA) test for measurement of serum level of IL-17, IL-20 and IL-22

"Sandwich" ELISA method was used to detect sample antigen. Precoated ELISA kits were used to determine IL-17, IL-20 and IL-22 serum levels (Ray Biotech, Inc. 3607 Parkway Lane, Suite 100, Norcross GA and KrishGen Biosystems, 15375, Whittier, CA, 90603; USA)

**IL-17, IL-20 and IL-22 assay kits:** These ELISA kits are in vitro method for the quantitative measurement of human cytokines in serum, plasma, cell culture supernatants and urine. This assay employs an antibody specific for human IL-17, IL-20 and IL-22 coated on a 96-well plate. Standards and samples are pipetted into the wells and IL-17, IL-20 and IL-22 present in a sample is bound to the wells by the immobilized antibody. After washing, biotinylated anti-human IL-17, IL-20 and IL-22 antibody is added. Unbound biotinylated antibody washed away; HRP-conjugated streptavidin is pipetted to the wells. The wells are again washed, a TMB substrate solution is added to the wells and colour develops in proportion to the amount of IL-17, IL-20 and IL-22 bound. The stop solution changes the colour from blue to yellow and the absorbance is measured at 450 nm and calculations were made.
Storage for ELISA Kits

ELISA Kits stored at 2° to 8°C. Standard (recombinant protein) can be stored at -20 °C or -80 °C (recommended at -80°C) after reconstitution. Opened Microplate Wells or reagents stored for up to 1 month at 2° to 8°C. Return unused wells to the pouch containing desiccant pack, reseal along entire edge. Repeated freeze-thaw cycles should be avoided.

ELISA Procedure

Step I. Bring all reagents and samples to room temperature (18 - 25°C) before use.

Step II. Then, added 100 µl of each standards, controls and samples into appropriate wells. Cover it and incubate for 2.5 hours at room temperature with gentle shaking.

Step III. The solution was discarded and 4 washing were given with 1x Wash Solution by filling each well with Wash Buffer (300 µl) using a micro Pipette. After the last wash, any remaining Wash Buffer was removed by inverted the plate and blotted it against clean filter papers or paper towels.

Step IV. 100 µl of 1x prepared biotinylated antibody was added to each well. Then incubate for 1 hour at room temperature with gentle shaking.

Step V. Discarded the solution and repeat the washing as in step III.

Step VI. 100 µl of prepared Streptavidin solution was added to each well and incubate for 45 minutes at room temperature with gentle shaking.

Step VII. Discarded the solution and repeat the washing as in step III.

Step VIII. Now, add 100 µl of TMB One-Step Substrate Reagent (Item H) to each well. Incubate for 30 minutes at room temperature in the dark with gentle shaking.

Step IX. 50 µl of Stop Solution (Item I) was added to each well.

Step X. The stop solution changes the colour of solution in wells from blue to yellow and measure the absorbance immediately at 450 nm with ELISA reader.
**Chapter 3  Material and Methods**

*Calculations:*

The mean absorbance for standard, controls and samples were calculated by subtracting the average zero standard optical density. Standard curve on log-log graph paper was plotted, with standard concentration in pg/ml on the x-axis and absorbance on the y-axis. Straight line through the standard points was draw and serum levels values of controls and samples were calculated in pg/ml.

The following standard curve is for demonstration only. A standard curve was run with each assay.

![Assay Diluent C](image)

Human Interleukin concentration (pg/ml)

3.6.2 Lipid Profile

*Storage for Lipid Profile Kits*

Lipid Profile Kits stored at 2° to 8°C till the expiry date mentioned on the labels.

*Procedure for Total Cholesterol*

1. Bring all the reagents and samples to room temperature (18 - 25°C) before use.

2. Three test tubes were labeled as Blank (B), Standard (S) and Total Cholesterol (Tc). Pipette out 1.0 ml enzyme reagent and added into test tube label as Blank (B), 1.0 ml enzyme reagent and 10 µl Cholesterol Standard were added into test tube labeled as Standard (S) and 1.0 ml enzyme reagent and 10 µl serum sample was added into test tube label as Total Cholesterol (Tc).
3. Then, shake well all the test tubes so that added solutions can mix well and then incubated for 5 minutes at 37°C. After incubation, absorbance of Standard (S) and Total Cholesterol (Tc) were recorded against Blank (B) at 500-540 nm.

**Calculations:** After the absorbance recorded, Calculations were made to obtain the volume of total Cholesterol present in the serum by using formula:

\[
\text{Total Cholesterol in mg/dl} = \frac{\text{Abs. of } Tc}{\text{Abs. of } S} \times 200
\]

**Procedure for HDL-Cholesterol**

1. Bring all reagents and samples to room temperature (18 - 25°C) before use.
2. Pipette out 0.2 ml serum sample and 0.3 ml precipitating agent into the centrifuge tube. Mix well and allow stand at room temperature for 5 minutes. Then, centrifuge at 3000 rpm for 10 minutes to get a clear supernatant.
3. Three test tubes were labeled as Blank (B), Standard (S) and HDL-Cholesterol (T_H). 1.0 ml enzyme reagent was added into test tube label as Blank (B), 1.0 ml enzyme reagent and 10 µl Cholesterol Standard were poured into test tube labeled as Standard (S) and 1.0 ml enzyme reagent and 100 µl supernatant were added into test tube labeled as HDL-Cholesterol (T_H).
4. All the three test tubes were shaked well and incubate for 5 minutes at 37°C. Absorbance of Standard (S) and HDL-Cholesterol (T_H) against Blank (B) were recorded at 500-540 nm.

**Calculations:** After the absorbance recorded, Calculations were made to obtain the volume of HDL-Cholesterol present in the serum by using formula:

\[
\text{HDL-Cholesterol in mg/dl} = \frac{\text{Abs. of } T_H}{\text{Abs. of } S} \times 50
\]

**Procedure for Triglycerides**

1. Bring all the reagents and samples to room temperature (18 - 25°C) before use.
2. All the three test tubes were labeled as Blank (B), Standard (S) and Test (T). 1.0 ml enzyme reagent was added into test tube labeled as Blank (B), 1.0 ml
enzyme reagent and 10 µl Standard were added into test tube labeled as Standard (S) and 1.0 ml enzyme reagent and 10 µl serum samples were added into test tube label as Test (T) and shake them well so the added solution mix uniformly.

3. Now tubes were incubated for 10 minutes at 37°C. After incubation, absorbance of Standard (S) and Test (T) were recorded against Blank (B) at 540-560 nm.

**Calculations:** After the absorbance recorded, Calculations were made to obtain the volume of Triglycerides present in the serum by using formula:

\[
\text{Triglycerides in mg/dl} = \frac{\text{Abs. of } T}{\text{Abs. of } S} \times 50
\]

**Procedure for LDL and VLDL**

The Friedewald equation was used to calculate VLDL- cholesterol (very low density lipoprotein cholesterol) and LDL- cholesterol (low density lipoprotein cholesterol) levels directly from the observed values of total cholesterol, triglycerides and HDL- cholesterol (high density lipoprotein cholesterol). The formula was formulated by Friedewald et al., in 1972 (Warnick et al., 1990).

**Calculations:**

\[
\text{VLDL-cholesterol} = \frac{\text{Triglycerides}}{5}
\]

\[
\text{LDL-cholesterol} = \text{Total cholesterol} - (\text{HDL-cholesterol} + \text{VLDL-cholesterol})
\]

**3.7 PSORIASIS AREA AND SEVERITY INDEX (PASI)**

Psoriasis Area and Severity Index (PASI) is the most widely used tool for the measurement of severity of psoriasis. It was first introduced by Fredrikkson and Petterson in 1978. PASI combines the assessment of the severity of lesions and area affected into a single score in the range 0 (no disease) to 72 (maximal disease).

**Procedure for PASI Score**

The total body surface area of the psoriatic patient was divided into four sections for PASI score calculations viz Head (H) measures total 10% of a patient’s skin; Upper Limbs (U) measures total 20% of a patient’s skin; Trunk (T) measures total 30% of a patient’s skin; Lower Limbs (L) measures total 40% of a patient’s skin. Each of these
areas was scored by itself, and then the four scores were combined into the final score i.e. PASI Score. For each section, the percentage of area of skin involved, was estimated by using the patient’s palm and transformed into a grade from 0 to 6 (as prescribed in the PASI calculator):

- 0% of involved area, grade: 0
- <10% of involved area, grade: 1
- 10 to 29% of involved area, grade: 2
- 30 to 49% of involved area, grade: 3
- 50 to 69% of involved area, grade: 4
- 70 to 89% of involved area, grade: 5
- 90 to 100% of involved area, grade: 6

With in each area, the severity was estimated by three clinical signs: erythema (redness), indurations (thickness) and desquamation (scaling). Severity parameters were measured on a scale 0 to 4 (from none to maximum). The sum of all three severity parameters was then calculated for each section of skin, multiplied by the area score for that area and multiplied by weight of respective section (0.1 for head, 0.2 for upper limbs, 0.3 for body, and 0.4 for lower limbs).

**Body Surface Area Score**

1. **(I)** 1 Palm of patient on head = 1/10 = 10% (10 palms) of head.
   
   If patient has 1 palm of psoriasis on scalp = 1/10 = 10% of head

2. **(2)** 1 palm of patient on upper limbs = 1/20 = 5% (20 palms)
   
   If patient has 1 palm of psoriasis on arm = 1/20 = 5% of upper limbs.

3. **(3)** 1 palm of patient on Trunk = 1/30 = 3.33% (30 palms)
   
   If patient has 1 palm of psoriasis on trunk = 1/30 = 3.33% of Trunk.

4. **(4)** 1 palm of patient on Lower limbs = 1/40 = 2.5% (40 palms)
   
   If patient has 1 palm of psoriasis on legs = 1/40 = 2.5% of Trunk.
Calculations for PASI Score:

Total Head Score = 0.1(E_h + T_h + S_h) (A_h)

Where E_h = Redness of head, T_h = Thickness of head, S_h = Scaling of head and A_h = Body Surface area score of head.

Total Upper Limb Score = 0.2(E_u + T_u + S_u) (A_u)

Where E_u = Redness of Upper Limb, T_u = Thickness of Upper Limb, S_u = Scaling of Upper Limb and A_u = Body Surface area score of Upper Limb.

Total Trunk Score = 0.3(E_t + T_t + S_t) (A_t)

Where E_t = Redness of Trunk, T_t = Thickness of Trunk, S_t = Scaling of Trunk and A_t = Body Surface area score of Trunk.

Total Lower Limbs Score: 0.4(E_l + T_l + S_l) (A_l)

Where E_l = Redness of Lower Limbs, T_l = Thickness of Lower Limbs, S_l = Scaling of Lower Limbs and A_l = Body Surface area score of Lower Limbs.

Total PASI Score = Total Head Score + Total Upper Limb Score + Total Trunk Score + Total Lower Limbs Score

PASI Score Assessment

The severity of psoriasis was graded according to the PASI score as ‘mild’, ‘moderate’ and ‘severe’ (Schmitt and Wozel, 2005).

PASI Score <7 as mild type psoriasis

PASI Score 7–12 as moderate type psoriasis

PASI Score >12 as severe type psoriasis

3.8 PSORIASIS DISABILITY INDEX (PDI)

The Psoriasis Disability Index questionnaire designed by Finlay in 1992 (Revised 1999) was used to check the disability produced due to psoriasis.

Procedure for PDI

The English language version of the PDI having 15 questionnaires was used in this study. It was a self explanatory and can be handed over to the patient who is asked...
to fill it in without the need for a detailed explanation and was filled itself by ask the questions in the PDI questionnaires to the patient who was not able to fill it. It was usually completed in 3 or 4 minutes.

Calculations for PDI

Scoring (Tick box method)

The scoring of each question was answered on a series of 4 answers, not at all (Score 0), a little (Score 1), a lot (Score 2), very much (score 3). If a question was left unanswered the score was taken as 0. The PDI is calculated by summing the score of each of the 15 questions resulting in a maximum of 45 and minimum of 0. The higher the score, the more quality of life was impaired in psoriatic patients. The PDI can also be expressed as a percentage of the maximum possible score of 45.

Detailed Analysis of PDI (Tick box method)

The PDI can be analyzed under five headings as follows:

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 1</td>
<td>= no effect</td>
</tr>
<tr>
<td>2 - 5</td>
<td>= small</td>
</tr>
<tr>
<td>6 - 10</td>
<td>= moderate</td>
</tr>
<tr>
<td>11 - 20</td>
<td>= very large</td>
</tr>
<tr>
<td>21 - 30</td>
<td>= extremely</td>
</tr>
<tr>
<td>31 - 45</td>
<td>= extremely large</td>
</tr>
</tbody>
</table>

In the present study Tick box method of PDI was used for scoring the disability index in the psoriatic patients. The rating of PDI score was calculated as:
3.9 **BLOOD PRESSURE (BP)**

Blood Pressure was measured with mercury sphygmomanometer by a physician using standard BP measurement protocol after the psoriatic patient had rested for 10 minutes.

*Procedure for Blood Pressure*

1. For the measurement of blood pressure, ausculatory method was adopted by using the mercury sphygmomanometer.

2. The cuff was wrapped around the arm evenly above the elbow with tubing towards the upper side.

3. The brachial artery in the angle of the elbow was palpated before placing the stethoscope over it.

4. The pressure in the cuff (bag) was increased by pumping the air into it till the sound of pulsations of the brachial artery disappears.

5. The pressure was generally in the range of 200 mm of mercury. After this air from the bag was released gently while the diaphragm of stethoscope was kept on the artery at the bend of elbow.

6. The sound was heard till the soft puffing noise was heard. At this point the reading on the manometer gives the systolic blood pressure.

7. More air was allowed to escape from the bag till the sound starts fading. The reading at this point gives the diastolic blood pressure.

3.10 **BODY MASS INDEX (BMI)**

BMI has become the medical standard used to measure overweight and obesity. BMI generally correlates highly with adiposity, although it can sometimes misclassify total body fat content e.g. athletes who are muscular, have high BMI, due to muscle weight, even though they are not fat. A graded classification of overweight and obesity using BMI values provides valuable information about increasing body fatness. It allows meaningful comparisons of weight status within and between populations and identifications of individuals / groups at risk of morbidity and mortality (Bose, 1995).
**Procedure for BMI**

### 3.10.1 Weight (kg)

Weight is a composite measure of total body size. The subject should be preferably nude or with minimum clothing. Weight of cases (psoriatic patients) and healthy control individuals was measured with weighing machine. The scale was calibrated to zero. The subject was able to stand without support with least number of clothes and without shoes. The subject stood on the machine with body weight evenly distributed between both the feet and the reading was noted.

### 3.10.2 Height (m)

Height measures the vertical distance from point vertex to the floor. Height of cases (psoriatic patients) and healthy control individuals was measured with anthropometric rod. The subjects were barefoot with minimum clothing so that positioning of the body can be seen. The weight of the subject was distributed evenly on both the feet and the head was positioned in frankfurt horizontal plane. The arms hanged freely by the sides of the trunk with palms facing the thighs.

The subject placed the heels together, both touching the base of the back of the wall. The scapula and buttocks were in contact with back wall. Some pressure was exerted on the mastoid processes to keep the head at maximum level. Moved the cross bar of rod to touch the vertex lightly. Care was taken that the subject's heels did not leave the ground and reading was noted in meters.

**Calculations for BMI**

BMI was calculated by using formula weight (kg)/height (m)^2.

**3.11 STATISTICAL ANALYSIS**

Statistical computations were made by using vassarstats and graphpad online tools to calculate the following statistical measurements:
3.11.1 Mean ($\bar{X}$)

Arithmetic mean ($\bar{X}$) was calculated by adding all the observations and dividing the sum by the total number of individuals:

$$\bar{X} = \frac{\sum x}{N}$$

Where

$\bar{X} = \text{Arithmetic mean}$

$\sum x = \text{Sum of all the observations}$

$N = \text{Total number of observed subjects}$

3.11.2 Standard Deviations (SD)

It measures the absolute dispersion or variability in the sample. It was calculated by using the following formula:

$$\text{S.D.} = \sqrt{\frac{\sum x^2 - (\sum x)^2}{N}}$$

Where

$\sum x^2 = \text{Sum of squares of individual values}$

$(\sum x)^2 = \text{The square of sum of the individual values}$

$N = \text{Total number of subjects}$

3.11.3 Percentage Analysis

Percent means “for every 100” or "out of 100." The (%) symbol as a quick way to write a fraction with a denominator of 100. As an example, 49 psoriatic patients out of a total of 100 were female. What percentage was female?

$$\frac{49}{100} \times 100 = 49\% = \frac{49}{100}$$

49% was female psoriatic patients.
3.11.4 Test of Significance or Student’s t-test

The t-test was applied for finding whether the differences observed in different communities were significant or non-significant.

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{(S.E.M.\_1)^2 + (S.E.M.\_2)^2}}
\]

Where

\( \bar{X}_1 \) = mean of a particular parameter in one population

\( \bar{X}_2 \) = mean of same parameter in the second population

\( (S.E.M.\_1) \) = Standard error of mean in one population.

\( (S.E.M.\_2) \) = Standard error of mean in second population.

3.11.5 Pearson Correlation coefficient \((r)\)

The quantity \( r \), called the linear correlation coefficient, measures the strength and the direction of a linear relationship between two variables. The linear correlation coefficient is sometimes referred to as the Pearson product moment correlation coefficient in honor of its developer Karl Pearson.

The mathematical formula for computing \( r \) was:

\[
r = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{n(\sum x^2) - (\sum x)^2} \sqrt{n(\sum y^2) - (\sum y)^2}}
\]

Where \( n \) is the number of pairs of data

The value for \( r \) is such that \(-1 \leq r \leq +1\). The + and − signs are used for positive linear correlations and negative linear correlations, respectively.
Positive Correlation: If \( x \) and \( y \) have a strong positive linear correlation, \( r \) is close to +1. An \( r \) value of exactly +1 indicates a perfect positive fit. Positive values indicate a relationship between \( x \) and \( y \) variables such that as values for \( x \) increase, values for \( y \) also increase.

Negative Correlation: If \( x \) and \( y \) have a strong negative linear correlation, \( r \) is close to -1. An \( r \) value of exactly -1 indicates a perfect negative fit. Negative values indicate a relationship between \( x \) and \( y \) such that as values for \( x \) increase, values for \( y \) decrease.

No Correlation: If there is no linear correlation or a weak linear correlation, \( r \) is close to 0. A value near zero means that there is a random, nonlinear relationship between the two variables.
APPENDIX-I

PASI SCORE SHEET

Patient Chart #________________________ Patient Initials ________________
Date of Visit________________________

Psoriatic Body Surface Area (BSA)

<table>
<thead>
<tr>
<th>Body Segment</th>
<th>% of Total BSA</th>
<th>Anterior Sites Affected (% of Total BSA)</th>
<th>Posterior Sites Affected (% of Total BSA)</th>
<th>Row % Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>10%</td>
<td>+</td>
<td></td>
<td>= %</td>
</tr>
<tr>
<td>Upper Limbs</td>
<td>20%</td>
<td>+</td>
<td></td>
<td>= %</td>
</tr>
<tr>
<td>TRUNK</td>
<td>30%</td>
<td>+</td>
<td></td>
<td>= %</td>
</tr>
<tr>
<td>Lower limbs</td>
<td>40%</td>
<td>+</td>
<td></td>
<td>= %</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>+</td>
<td></td>
<td>= %</td>
</tr>
</tbody>
</table>

a Percentage of body surface affected by Psoriasis (total of all affected segments)

Psoriasis Area and Severity Index (PASI)

\[
PASI = 0.1(E_h + T_h + S_h)(A_h) + 0.2(E_u + T_u + S_u)(A_u) + 0.3( E_t + T_t + S_t) (A_t) + 0.4( E_l + T_l + S_l) (A_l)
\]

<table>
<thead>
<tr>
<th>Row</th>
<th>Head</th>
<th>Upper Limbs</th>
<th>Trunk</th>
<th>Lower Limbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Erythema(^1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Thickness(^1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Scaling(^1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Total each column</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Degree of Involvement(^2)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Multiply Row 4 by Row 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>X 0.10</td>
<td>X 0.20</td>
<td>X 0.30</td>
<td>X 0.40</td>
</tr>
<tr>
<td>8</td>
<td>Multiply Row 6 by Row 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Total PASI (add together each column from Row 8)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Rank severity of psoriatic lesions: 0=none, 1=slight, 3=moderate, 4=very severe

\(^2\) Rank severity of psoriatic involvement: 0=none, 1= <10%, 2= 10% to < 30%, 3= 30% to < 50%, 4=50% to <70%, 5=70% to <90%, 6=90% to 100%

Investigator Signature: ___________________________ Date: ________________
APPENDIX - II

PSORIASIS DISABILITY INDEX

- Thank you for your help in completing this questionnaire.
- Please tick one box for every question.
- Every question relates to the **LAST FOUR WEEKS ONLY**.

All questions relate to the **LAST FOUR WEEKS**.

**DAILY ACTIVITIES:**

1. How much has your psoriasis interfered with you carrying out work around the house or garden?
   - Very much ☐
   - A lot ☐
   - A little ☐
   - Not at all ☐

2. How often have you worn different types or colours of clothes because of your psoriasis?
   - Very much ☐
   - A lot ☐
   - A little ☐
   - Not at all ☐

3. How much more have you had to change or wash your clothes?
   - Very much ☐
   - A lot ☐
   - A little ☐
   - Not at all ☐

4. How much of a problem has your psoriasis been at the hairdressers?
   - Very much ☐
   - A lot ☐
   - A little ☐
   - Not at all ☐

5. How much has your psoriasis resulted in you having to take more baths than usual?
   - Very much ☐
   - A lot ☐
   - A little ☐
   - Not at all ☐
Chapter 3

Material and Methods

- There are two different versions of questions 6, 7 and 8.
- If you are at regular work or at school please answer the first questions 6 - 8.
- If you are not at work or school please answer the second questions 6 - 8.

All questions relate to the LAST FOUR WEEKS.

WORK OR SCHOOL (if appropriate)

6. How much has your psoriasis made you lose time off work or school over the last four weeks?  
   - Very much □  
   - A lot □  
   - A little □  
   - Not at all □

7. How much has your psoriasis prevented you from doing things at work or school over the last four weeks?  
   - Very much □  
   - A lot □  
   - A little □  
   - Not at all □

8. Has your career been affected by your psoriasis? e.g. promotion refused, lost a job, asked to change a job.  
   - Very much □  
   - A lot □  
   - A little □  
   - Not at all □

IF NOT AT WORK OR SCHOOL: ALTERNATIVE QUESTIONS

6. How much has your psoriasis stopped you carrying out your normal daily activities over the last four weeks?  
   - Very much □  
   - A lot □  
   - A little □  
   - Not at all □

7. How much has your psoriasis altered the way in which you carry out your normal daily activities over the last four weeks?  
   - Very much □  
   - A lot □  
   - A little □  
   - Not at all □

8. Has your career been affected by your psoriasis? e.g. promotion refused, lost a job, asked to change a job.  
   - Very much □  
   - A lot □  
   - A little □  
   - Not at all □
All questions relate to the LAST FOUR WEEKS.

PERSONAL RELATIONSHIPS:

9. Has your psoriasis resulted in sexual difficulties over the last four weeks?  
   - Very much □  
   - A lot □  
   - A little □  
   - Not at all □

10. Has your psoriasis created problems with your partner or any of your close friends or relatives?  
    - Very much □  
    - A lot □  
    - A little □  
    - Not at all □

LEISURE:

11. How much has your psoriasis stopped you going out socially or to any special functions?  
    - Very much □  
    - A lot □  
    - A little □  
    - Not at all □

12. Is your psoriasis making it difficult for you to do any sport?  
    - Very much □  
    - A lot □  
    - A little □  
    - Not at all □

13. Have you been unable to use, criticised or stopped from using communal bathing or changing facilities?  
    - Very much □  
    - A lot □  
    - A little □  
    - Not at all □

14. Has your psoriasis resulted in you smoking or drinking alcohol more than you would do normally?  
    - Very much □  
    - A lot □  
    - A little □  
    - Not at all □

TREATMENT:

15. To what extent has your psoriasis or treatment made your home messy or untidy?  
    - Very much □  
    - A lot □  
    - A little □  
    - Not at all □

Please check that you have answered all the questions.

Thank you for your help.