Socioeconomic and sociocultural determinants of psychological distress and quality of life among patients with psoriasis in a selected multi-ethnic Malaysian population

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ABSTRACT

Patients with psoriasis may have increased risk of psychological comorbidities. This cross-sectional study aimed at determining associations between sociocultural and socioeconomic factors with the Depression Anxiety Stress Scale (DASS) scores and the Dermatology Life Quality Index (DLQI) scores. Adult patients with psoriasis were recruited from a Dermatology outpatient clinic via convenience sampling. Interviews were conducted regarding socio-demographic factors and willing subjects were requested to complete the DASS and DLQI questionnaires. The Pearson \( \chi^2 \) test, Fisher’s exact test and multivariate logistic regression were used for statistical analysis to determine independent predictors of depression, anxiety, stress and severe impairment of quality of life. Unadjusted analysis revealed that depression was associated with Indian ethnicity (\( p = .041 \)) and severe impairment of quality of life was associated with Indian ethnicity (\( p = .032 \)), higher education (\( p = .013 \)), higher income (\( p = .042 \)), and employment status (\( p = .014 \)).
Multivariate analysis revealed that Indian ethnicity was a predictor of depression ($p = .024$). For stress, tertiary level of education ($p = .020$) was an independent risk factor while a higher monthly income was a protective factor ($p = .042$). The ethnic Indians and Malays were significantly more likely than the ethnic Chinese to suffer reduced quality of life ($p = .001$ and $p = .006$ respectively) and subjects with tertiary education were more likely to have severe impairment of quality of life ($p = .002$). Our study was unique in determining sociocultural influences on psychological complications of psoriasis in a South East Asian population. This has provided invaluable insight into factors predictive of adverse effects of psoriasis on psychological distress and quality of life in our patient population. Future studies should devise interventions to specifically target at risk groups in the development of strategies to reduce morbidity associated with psoriasis.

**Keywords:** Psoriasis; psychology; socioeconomic factors; culture; quality of life;

**INTRODUCTION**

Psoriasis is a common inflammatory dermatosis accounting for 9.5% of outpatient dermatology consultations in Malaysia (Sinniah, Saraswathy Devi, & Prashant, 2010). A study conducted in a neighbouring country with a predominantly ethnic Chinese population have found that 34% of patients with psoriasis had anxiety while 9.7% had depression (Yang et al., 2005). Patients who have psoriasis, especially women, have higher rates of depression and anxiety compared to dermatologically healthy controls (Golpour et al., 2012). There has also been a higher risk of suicidal tendencies among psoriatic patients compared with controls (Kurd, Troxel, Crits-Christoph, & Gelfand, 2010).

The impact of psoriasis on quality of life is comparable to other chronic diseases and major medical conditions (Moller, Erntoft, Vinding, & Jemec, 2015; Rapp, Feldman, Exum, Fleischer, & Reboissin, 1999). Stressful events are a well-known trigger of psoriasis and may thus affect quality of life (Xhaja, Shkodrani, Frangaj, Kuneshka, & Vasili, 2014). A previous study performed in Malaysia suggested that psoriasis had a moderate effect on quality of life. (Nyunt, Low, Ismail, Sockalingam, & Min, 2015). Malaysia is a multi-ethnic country, and therefore offers a unique
opportunity to determine ethnic differences in psychosocial determinants of quality of life and psychological well-being in this patient group. The sociodemographic factors and ethnic influences on psychological distress (in terms of depression, anxiety and stress) and quality of life in individuals with psoriasis have yet to be clearly defined.

In order to effectively devise strategies to reduce adverse effects of psoriasis on psychology and quality of life, we first need to determine the potential risk factors for these adverse outcomes. The identification of potentially modifiable risk factors will help determine the nature of interventions to be evaluated, while non-modifiable risk factors such as ethnicity and income levels will help us specifically target interventions on at-risk groups. This study aimed to determine any potential association between sociocultural and socioeconomic factors with the depression, anxiety, stress and quality of life among patients with psoriasis.

**METHODOLOGY**

*Sample population*

This was a cross-sectional study carried out in the Dermatology clinic of a tertiary referral hospital in Kuala Lumpur, Malaysia. 102 adult patients with psoriasis were recruited between April 2013 and January 2015 using convenience sampling. Ethical approval was obtained from the hospital Medical Ethics Committee (MEC Ref No. 967.6). Inclusion criteria were mentally competent adult patients with psoriasis aged 18 years and above. The exclusion criterion was patients who were illiterate, as self-administered questionnaires were used. Based on a previous study by Nyunt et al. where 40.3% of subjects who were working or studying had severely impaired quality of life vs. 26.0% of those who were not working, the calculated sample size was 91 subjects for \( \alpha = .05 \) and power = .80 (Nyunt et al., 2015). Accounting for a possible attrition rate of 10%, 102 subjects were recruited for the study.
Data collection

Information on sociodemographic and economic factors for this study was obtained during face-to-face interviews. The sociodemographic and economic factors obtained included age, gender, ethnicity, level of education, income bracket (less than RM2000, RM2000-4999, RM5000 or more), marital status and employment status. The level of education was subsequently dichotomised to ‘secondary or less’, and ‘tertiary or above’; while income bracket was dichotomised to ‘less than RM2000’ and ‘RM2000 or above’. The cut-off of RM2000 (USD 500 approximately) was selected, as individuals with income levels of below RM2000 are considered low-income groups by government policies which then deems the individual eligible for cash handouts. Employment status was dichotomised to ‘working or studying’ (including white collar, blue collar and student) and ‘retired, unemployed or homemaker’ (including retired [white collar], retired [blue collar], unemployed or homemaker). Relationship status was combined as ‘married or in relationship’ and ‘single, divorced or widowed’. Combination of individual categories was performed to facilitate analysis as some of the categories contained very few subjects.

Depression, anxiety and stress

Depression, anxiety and stress were measured with the 42-item Depression Anxiety Stress Scale (DASS) (see Appendix 1). The DASS is a self-reported questionnaire which comprises fourteen questions in the three domains of depression, anxiety and stress assessing these emotions over the past week. For depression, the items evaluate low mood, loss of interest and involvement, low motivation, poor self-esteem, hopelessness and loss of value of life. For anxiety, autonomic arousal, physical effects and subjective feelings are assessed including those experienced during situational reactions. For stress, long-term non-specific arousal is assessed including irritability, agitation, reactivity, impatience and inability to relax. Each question is scored on a four-point Likert scale of 0, 1, 2 and 3. The domain scores are considered separately. The cut-off scores for the presence of depression, anxiety and stress were defined as the scores equal to or above 10, 8 and 15 respectively (Lovibond & Lovibond, 1995). The Cronbach’s α values for the English language version were .91, .81 and .89 for depression, anxiety and stress respectively (Lovibond
For the Malay language questionnaire, Cronbach’s α values were .94, .90 and .87 for depression, anxiety and stress respectively while for the simplified Chinese language questionnaire, the corresponding values were .92, .92 and .93 respectively (Chan et al., 2012; Ramli, Rosnani, & Aidil Faszrul, 2012).

Quality of life

The Dermatology Life Quality Index (DLQI) (see Appendix 2) is a commonly-used self-reported measurement of health-related quality of life specific to Dermatology which comprises ten questions assessing symptoms and feelings, daily activities, leisure, work, and school, personal relationships and treatment over the preceding week. A score of 0–3 is given based on the response to individual questions (either ‘not at all’, ‘a little’, ‘a lot’ or ‘very much’) and these scores are summed up with the total ranging from 0 (no impairment) to 30 (maximum impairment). Cronbach’s α for the DLQI ranged from .83 to .93 (Lewis & Finlay, 2004). For the simplified Chinese language version, the Cronbach’s α was .91 when used among Chinese patients with psoriasis (He et al., 2013). For the Malay language version, the validated questionnaire was provided; our calculations based on our sample showed a Cronbach’s α of .935 for the overall questionnaire. We then dichotomised our sample using the cut-off score of DLQI of ten and above indicating severe impairment in quality of life (Nyunt et al., 2015).

Statistical analysis

Differences in basic demographic factors for depression, anxiety, stress and quality of life were determined with the Pearson χ2 test, apart from factors below five degrees of freedom when the Fisher’s exact was employed. Variables with more than two categories e.g. ethnicity were compared with logistic regression with dummy variables. Based on significance testing to identify possible confounders, variables of a p-value cut-off of less than .25 were then entered into multivariate equations to identify independent predictors. Stepwise backward method was applied. Multicollinearity was tested for and not found. All tests were two-tailed with significance defined as p < .05.
Severity of disease compared across patient groups

Severity of disease was measured using the Psoriasis Area and Severity Index (PASI) score as assessed by one investigator (ZK). Erythema, thickness or induration (I) and scaling or desquamation (D) were assessed in four areas namely the head and neck (H), upper limbs (UL), trunk (T) and lower limbs (LL). The proportion of lesions in each area was assigned a numerical score (A): 0–9% = 1, 10–29% = 2, 30–49% = 3, 50–69% = 4, 70–89% = 5, 90–100% = 6. The following formula is then used to calculate the PASI score:

\[
.1(EH + IH + DH) AH + .2(EUL + IUL + DUL) AUL \\
+.3(ET + IT + DT) AT + .4(ELL + ILL + DLL) ALL
\]

Histograms and normal curves were plotted to compare distribution of PASI scores between different groups. As PASI scores are non-parametric data, the median PASI scores between different groups were compared using the Mann Whitney-U test to evaluate whether the correlations between sociodemographic and economic factors with depression, anxiety, stress or quality of life could be related to differences in disease severity.

RESULTS

One hundred and two subjects were recruited, of which two were excluded from the study. The mean age of 100 subjects included in the study was 50.9 years with a standard deviation of 17.7 years. Demographics of our study population are as noted in Table 1. Significant differences between males and females were observed for level of education and employment/student status, \( p = .047 \) and \( p = .002 \) respectively with a higher proportion of males obtaining secondary education and currently in active employment or studying. The median DLQI score was 6.00 (inter-quartile range, IQR 4.00) with 31.0% (n = 31) having severe impairment of quality of life as defined by a DLQI score of ten and above. For the DASS scores, the frequency of depression, anxiety and stress symptoms were 27.0, 37.0 and 25.0% respectively. Median scores for all 3 domains of DASS were .00 with IQR of 1.00 for depression, 2.00 for anxiety and .75 for stress respectively.
Depression, anxiety and stress

Ethnic Indians were more likely to have symptoms of depression compared to ethnic Chinese (OR = 2.994, p = .041) and Indian ethnicity was found to be a significant predictor for depression in the multivariate analysis (adjusted OR = 3.716, p = .024) (Tables 2 and 3). Subsequent multivariate logistic regression analysis revealed that tertiary education was an independent predictor factor for stress (adjusted OR = 3.392, p = .020) but an income level of RM2000 and above was a protective factor (adjusted OR = .320, p = .042) (Table 3).

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<th>Table 2. Sociocultural and socioeconomic factors and the presence of psychological distress or severe impairment of quality of life.</th>
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Quality of life

Unadjusted analysis revealed that severe impairment of quality of life was associated with ethnic differences with ethnic Indians having more impaired quality of life compared to ethnic Chinese (OR = 3.119, p = .032), higher education (OR = 2.975, p = .013), higher income (OR = 2.429, p = .042), and employment status (OR = 3.136, p = .014). Following multivariate analysis and stepwise removal of non-significant factors, however, only Indian or Malay ethnicity compared to Chinese (adjusted OR = 13.608, p = .001 and adjusted OR = 5.101, p = .006 respectively) and tertiary education (adjusted OR = 5.146, p = .002) were significant predictive factors of severe impairment of quality of life (Table 3).

Severity of disease compared across patient groups

There were no significant differences in median PASI scores across the different groups compared (Table 4).
DISCUSSION

Our study revealed unique insights into social, ethnic and economic determinants of psychological distress among psoriasis, mainly in terms of lower level of education and greater income level above the poverty level being independent protective factors against stress in patients with psoriasis. In addition, we also revealed interesting ethnic variations and the effect of educational level in quality of life among individuals with psoriasis attending a teaching hospital in an urban location in a South-East Asian nation. Of note, DASS focuses on psychological distress in general whereas the DLQI focuses on quality of life related to the skin condition in question, which is psoriasis in this study.

The relationship between Indian ethnicity and depression could be due to cultural influences and social acceptance of expressivity (Matsumoto et al., 2008). However, further studies need to be conducted to elucidate the possible reasons for this phenomenon. The relationship between tertiary level of educational and stress in our psoriasis patient population was of interest and has not previously been reported. We postulate that this may be related to higher work-related stress due to their roles and expectations in their various occupations. The personality
traits or characteristics that drive these individuals to higher achievements may also conversely lead to higher expectations of themselves and stress levels. People with Type A personalities for instance, strive for achievement and may even select environments with higher stress levels or cause higher levels of stress in the work environment due to workplace conflicts (Spector & O’Connell, 1994). An alternative explanation for this unique finding could be that individuals with tertiary levels of education with psoriasis were more likely to develop stress from having psoriasis and individual appearance holds a greater value among those with higher levels of education, with those with lower levels of education less likely to be stressed by the presence of a dermatological condition.

The finding that higher income levels of RM2000 and above lead to a lower frequency of symptoms of stress is less surprising as an improved economic situation can aid patients in terms of obtaining resources such as adequate supplies for daily needs, medications and other forms of treatment. There would be also less trepidation regarding the future as basic needs are provided and more savings can be obtained in order to plan for a rainy day or for healthcare needs.

A study by Hrehorów et al. showed no difference between genders in terms of stigmatisation (Hrehorów, Salomon, Matusiak, Reich, & Szepietowski, 2012). This is corroborated by our findings. We postulate that the support systems and resources provided by close relationships such as marriage and romantic relationships could be balanced by the depletion of resources due to stressors resulting from the disease (Chokkanathan, 2009). Therefore, no significant association was found between relationship status and depression, anxiety or stress.

The literature behind the social determinants of quality of life in psoriasis from Asian studies have been conflicting. Yang et al. noted that demographic and social classification variables did not have a significant association with quality of life (Yang et al., 2005). Conversely, a study performed in a similar population noted that relationship and employment status were associated with severe impairment of quality of life (Nyunt et al., 2015). Quality of life was reduced among individuals with higher level of education, higher income and employed.
Furthermore, higher level of education was predictive of reduced quality of life. Our study therefore partially supports the findings of Nyunt et al. and refutes that of Yang et al.

In our study, the ethnic Indians and Malays had more severely impaired quality of life compared to the ethnic Chinese. A previous population based study involving over 3000 respondents had revealed no significant ethnic differences in quality of life (Azman et al., 2003). This, therefore suggest that the effects of ethnicity on quality of life in our disease-specific sample could be associated with the presence of psoriasis. The rationale behind this difference is unclear. Perhaps the different Fitzpatrick skin types (whether the patients have darker skin such as in the ethnic Indian population or fairer skin such as in the ethnic Chinese population) affect the appearance of the plaques and subsequent cosmesis or perhaps cultural attitudes to the presence of psoriatic plaques may differ.

Tertiary education was a predictive factor of severe impairment of quality of life. We postulate that this finding could be related to stress as tertiary education was similarly a predictive factor for stress. It is also possible that cosmesis and the role of stigmatisation could be more profoundly affecting the patient’s psychological status for those who are more highly educated in view of their social or professional roles and hence, have deleterious effects on the quality of life. The associations between sociodemographic and economic factors are unlikely to be due to differences in disease severity as there were no significant differences in the PASI scores between the different groups.

Our study is limited by its convenience sample and the lack of a non-psoriatic control group. However, our unique findings of the link between greater education and lower income with stress, as well as the ethnic differences in quality of life in our patient population with psoriasis are of interest, and now justify the funding of larger, appropriately controlled, prospective study to evaluate the temporal relation of these factors with psychological and quality of life outcomes. The identification of social, ethnic and economic factors associated with adverse psychological outcomes in psoriasis patients will help the physician target the assessment of effective preventive strategies to specific at risk groups.
CONCLUSION

Tertiary education was a significant independent predictor for stress and severe impairment of quality of life. Monthly income of RM2000 and above was a protective factor for stress, while ethnic Indians and Malays with psoriasis have worse quality of life than ethnic Chinese. Indian ethnicity was also an independent predictor for depression. Our findings now justify the funding of a larger prospective study to compare these findings in people living with psoriasis with a control group, as well as to evaluate the possible temporal relationship between income, education and ethnicity and the development of adverse psychological sequelae in psoriasis. Clearly defining socioeconomic characteristics within the population of patients with psoriasis will help specifically target interventions to at risk groups.

Disclosure statement
No potential conflict of interest was reported by the authors.

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We would like to acknowledge Prof A. Y. Finlay and team for their permission to use the Dermatology Life Quality Index (DLQI).

Appendix 1. DASS questionnaire
(1) I found myself getting upset by quite trivial things.
(2) I was aware of dryness of my mouth.
(3) I couldn’t seem to experience any positive feeling at all.
(4) I experienced breathing difficulty (e.g. excessively rapid breathing, breathlessness in the absence of physical exertion).
(5) I just couldn’t seem to get going.
(6) I tended to over-react to situations.
(7) I had a feeling of shakiness (e.g. legs going to give way).
(8) I found it difficult to relax.
(9) I found myself in situations that made me so anxious I was most relieved when they ended.
(10) I felt that I had nothing to look forward to.
(11) I found myself getting upset rather easily.
(12) I felt that I was using a lot of nervous energy.
(13) I felt sad and depressed.
(14) I found myself getting impatient when I was delayed in any way (e.g. lifts, traffic lights, being kept waiting).
(15) I had a feeling of faintness.
(16) I felt that I had lost interest in just about everything.
(17) I felt I wasn’t worth much as a person.
(18) I felt that I was rather touchy.
(19) I perspired noticeably (e.g. hands sweaty) in the absence of high temperatures or physical exertion.
(20) I felt scared without any good reason.
(21) I felt that life wasn’t worthwhile.
(22) I found it hard to wind down.
(23) I had difficulty in swallowing.
(24) I couldn’t seem to get any enjoyment out of the things I did.
(25) I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat).
(26) I felt down-hearted and blue.
(27) I found that I was very irritable.
(28) I felt I was close to panic.
(29) I found it hard to calm down after something upset me.
(30) I feared that I would be ‘thrown’ by some trivial but unfamiliar task.
(31) I was unable to become enthusiastic about anything.
(32) I found it difficult to tolerate interruptions to what I was doing.
(33) I was in a state of nervous tension.
(34) I felt I was pretty worthless.
I was intolerant of anything that kept me from getting on with what I was doing.

I felt terrified.

I could see nothing in the future to be hopeful about.

I felt that life was meaningless.

I found myself getting agitated.

I was worried about situations in which I might panic and make a fool of myself.

I experienced trembling (e.g. in the hands).

I found it difficult to work up the initiative to do things.

Source: www.psy.unsw.edu.au/dass/

Appendix 2. DLQI questionnaire

1. Over the last week, how itchy, sore, painful or stinging has your skin been?
2. Over the last week, how embarrassed or self conscious have you been because of your skin?
3. Over the last week, how much has your skin interfered with you going shopping or looking after your home or garden?
4. Over the last week, how much has your skin influenced the clothes you wear?
5. Over the last week, how much has your skin affected any social or leisure activities?
6. Over the last week, how much has your skin made it difficult for you to do any sport?
7. Over the last week, has your skin prevented you from working or studying? If ‘No’, over the last week how much has your skin been a problem at work or studying?
8. Over the last week, how much has your skin created problems with your partner or any of your close friends or relatives?
9. Over the last week, how much has your skin caused any sexual difficulties?
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?

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REFERENCES


