Hong Kong J. Dermatol. Venereol. (2009) **17**, 69-77

Original Article

Depression in Hong Kong Chinese patients with psoriasis
香港華人銀屑病患者中的憂鬱症

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Objective: The purpose of this study is to examine the point prevalence of depressive disorders, health-related quality of life (HRQoL) and their clinical correlates in a group of Hong Kong Chinese patients with psoriasis. ***Method:*** This was a cross-sectional study held in two public dermatology clinics between 1st July 2007 and 30th January 2008. A total of 221 Chinese patients with psoriasis were recruited. All participants were interviewed by the principal investigator using the Chinese-Bilingual Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Axis I, Patient Version (CB-SCID-I/P) to identify patients with a diagnosis of depressive disorders and other psychiatric disorders according to the Diagnostic and Statistical Manual of Mental Disorder, Fourth Edition. The severity of depression was assessed by using Hamilton Depression Rating Scale (HAM-D), and self-rated Beck Depression Inventory (BDI). The severity of psoriasis was assessed by the dermatologists using Psoriasis Area and Severity Index (PASI). The Psoriasis Disability Index (PDI) was adopted to measure the HRQoL of the subjects. ***Results:*** The point prevalence of 'any kind of depressive disorder' (AD) was 26.4%. History of depression and PASI score were found to be the independent predictors of depression in patients with psoriasis. Regarding the HRQoL, a statistically significant difference in the mean score of PDI was found between the AD (37.09, standard deviation=18.06) and 'no psychiatric diagnosis' (NP) (13.72, standard deviation=15.42) groups ($p<0.001$). It was found that severity of depression accounted for 71.4% of the total variance of HRQoL in linear regression. Only 15.5% of depressed psoriatic patients were referred for psychiatric treatment. ***Conclusion:*** This study showed that our sample of Chinese patients with psoriasis had similar point prevalence of depression comparable to their Western counterparts. Depression in psoriatic patients was often unrecognized and untreated.

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目標：本研究之目的為檢查一組香港華人銀屑病患者的憂鬱症時點患病率、健康相關生活質量及其相關的臨床狀況。**方法：**本橫斷面研究於 2007 年 7 月 1 日至 2008 年 1 月 30 日在兩所公立皮膚診所進行。共搜集了 221 名華人銀屑病患者，所有參與的患者均由主要研究人員面見，並以《心理障礙診斷與統計手冊》第四版（軸一，病人版）的中文 / 中英對照結構式精神檢查來診斷患有抑鬱紊亂和患有其他《心理障礙診斷與統計手冊》第四版（軸一，病人版）中的精神紊亂的患者。用漢氏憂鬱量表和自評貝克憂鬱量表來評估患者的憂鬱嚴重程度。用銀屑病皮損面積和嚴重程度指數來評估患者銀屑病的嚴重程度。用銀屑病殘障指數來評定患者的健康相關生活質量。**結果：**任何類型的抑鬱紊亂的時點患病率為 26.4% 。憂鬱症的病史和銀屑病皮損面積和嚴重程度指數是銀屑病患者患有憂鬱症的獨立預測因子。關於健康相關生活質量，銀屑病殘障指數的平均評分在「任何類型的抑鬱紊亂」組別（37.09, SD=18.06）和「無精神病診斷」組別（13.72, SD=15.42）之間存在有統計學意義的差異（P<0.001）。銀屑病的嚴重程度在線性回歸中佔健康相關生活質量的總方差的 71.4% 。只有 15.5% 的憂鬱銀屑病患者被轉介接受精神科治療。**結論：**本研究顯示本組華人銀屑病患者的憂鬱症時點患病率與西方患者接近。銀屑病患者中的憂鬱症常常被忽略及未獲治療。

Keywords: Chinese, depression, psoriasis, quality of life

關鍵詞：華人，憂鬱症，銀屑病，生活質量

Introduction

Psoriasis is a common chronic inflammatory skin disease that affects about 2% of the Western population. An estimated prevalence of 0.3% among Chinese people has been reported.[1] Studies have reported that psoriasis is frequently associated with psychiatric morbidity especially depression.[2-5] Previous studies also suggested that psoriatic patients were more likely to suffer from depression than most other dermatological illnesses.[6] Both the onset and activity of psoriasis were also significantly associated with depression. Studies also showed that health-related quality of life (HRQoL) was compromised by psoriasis although there was a poor correlation with disease severity.[7,8]

A number of studies have attempted to investigate the prevalence and clinical correlation of depression in patient with psoriasis in different countries. There was a wide difference in the frequency of depression and findings on the clinical correlates of depression in patient with psoriasis were inconsistent. Nevertheless, most of the studies have focused on Caucasian patients who have different socio-economic and cultural backgrounds compared to our local population. Therefore, a well-designed study on the Hong Kong Chinese population with psoriasis was clearly indicated. Moreover, little is known about depression among Chinese people with psoriasis in Hong Kong and its relationship with clinical severity and HRQoL.

Given this background, this study was devised to study the prevalence of depressive illness and its socio-demographic determinant, and its effect on HRQoL of patient with psoriasis in the public health-care setting.

Methodology

Design and settings

This was a cross-sectional study conducted in two public dermatology clinics – Fanling Integrated Treatment Centre (FLITC) and Yung Fung Shee Dermatological Clinic (YFSDC) within a 7-month period. The data was collected between 1st July 2007 and 30th December 2007 in FLITC, 1st August 2007 and 30th January 2008 in YFSDC.

Patient inclusion and exclusion

All Chinese psoriatic patients of 18 years old or above attending FLITC or YFSDC who were able to give consent to participating in the study were included. Diagnosis of psoriasis was established by clinical assessment by the attending dermatologists; if required, skin biopsy was done to confirm the diagnosis. Psoriatic patients were only excluded from the study if they (1) were not ethnic Chinese, (2) unable to sign the consent form, (3) were unable to communicate either verbally or by writing in Chinese or (4) were suffering from other significant chronic dermatological illnesses including severe eczema, acne vulgaris and blistering diseases.

Sampling and size

Assuming a prevalence of 41%[9] (the prevalence rate of a local study using Hospital Anxiety and Depression Scale to screen depression in psoriatic patients), z value of 1.96 and a confidence interval of 7%, the sample size was estimated to be 190. Convenience sampling was used. The principal investigator (PI) visited the skin clinics three sessions every week i.e. 2:00pm to 5:30pm every Tuesday, Thursday and Friday. All patients who satisfied the inclusion criteria and attended the study sessions were invited to participate in the study.

Measurement

All participants were interviewed by the PI according to the protocol "Chinese-Bilingual Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition Axis I, Patient Version" (CB-SCID-I/P). The Beck Depression Inventory (BDI)[10,11] and Hamilton Depression Rating Scale (HAM-D)[12] were applied in this study to measure the severity of depression. The PI was blinded to the results of the clinical data. The attending dermatologist would assess the severity of psoriasis of the subject using the Psoriasis Area and Severity Index (PASI)[13] scoring system at the same time. The subject was also requested to complete the Psoriasis Disability Index (PDI) assessment sheet. The assessment tools – CB-SCID-I/P,[14-16] BDI,[17] HAM-D,[18] PDI[19] were all locally validated.

Statistical analysis

Data were analyzed by SPSS Version 13.0 for Windows. The statistical significance level was set at $p<0.05$ unless otherwise specified. Descriptive statistics were used to characterize the socio-demographic and clinical profile of the whole sample.

For the statistical analysis, patients with major depressive episodes, minor depressive disorder or dysthymia with or without other psychiatric co-morbidity were combined into one group, which was called the 'any kind of depressive disorder' group (AD). Patients with other psychiatric disorders were combined into one group called the 'other psychiatric disorders' group (OP) whilst those without any psychiatric disorder formed the 'no psychiatric diagnosis' group (NP).

Socio-demographic and clinical variables of the AD, OP groups were compared with NP group as reference. Categorical variables were analyzed by the Chi-square test or Fischer's exact test in case of cell with expected frequency less than 5. Continuous variables were analyzed by t-test or Mann-Whitney U test, depending on the distribution of the data. Any of the variables for which a significant difference ($p<0.1$) was detected between the AD and NP groups or between the OP and NP groups were further tested by the correlation test to determine whether there was strong correlation among them. If the absolute value of the correlation between any pair of variables was ≥ 0.50, then only the one with the higher clinical significance was retained. The binary logistic regression with backward stepwise methods was employed to examine the impact of various independent variables on the development of 'any kind of depressive disorder' and 'other psychiatric disorders' with 'no psychiatric diagnosis' as a reference. To assess the effect of severity of depression and severity of psoriasis on the HRQoL, linear regression was carried out.

Ethical considerations

This study was designed and conducted according to the guidelines of the Declaration of Helsinki 2001. Approval to conduct the study was granted by the Joint Ethics Committee of the New Territories East Cluster Hospitals and the Faculty of Medicine, the Chinese University of Hong Kong and the Ethics Committee of Department of Health.

Results

Two hundred and forty patients with psoriasis were invited to participate in the study. Seven patients were excluded because they either fulfilled the exclusion criteria or failed to meet the inclusion criteria. Among the 233 eligible patients, eight of them refused to participate (response rate of 96.6%) and four were excluded because of incomplete data. Of these 221 analyzable subjects, there were 111 (50.2%) female and 110 (49.8%) male subjects. The mean age was 45.78, with a standard deviation (SD) of 13.29.

Clinical and psychiatric characteristics of the subjects

The clinical and psychiatric assessment results of the subjects are summarized in Tables 1 and 2 respectively.

There was statistically significant difference between AD and NP groups for the history of depressive disorders ($p<0.001$). There was no statistically significant difference between the AD and NP groups in terms of other socio-demographic data, duration and type of psoriasis. AD group subjects had significantly higher PASI scores than NP subjects (Table 3, $p<0.001$). There was a significant difference between the AD and NP groups in the use of systemic treatment ($p=0.009$). With respect to the scores of PDI, BDI and HAM-D, the AD group patients had significantly higher scores than NP group patients (Table 3, $p<0.001$). The AD group had more subjects with psoriatic arthropathy than the NP group, but that was not statistically significant ($p=0.093$). No statistically significant difference was found between the OP and NP groups in all socio-demographic and clinical variables.

Association between socio-demographic, clinical variables which significantly differentiate the group AD or OP with NP as reference

The correlation between selected variables were tested and assessed for multi-collinearity (Table 4). PDI was highly correlated with BDI, PASI and HAM-D ($r=0.544$, 0.525, 0.532, $p<0.001$), HAM-D was highly correlated with BDI ($r=0.828$, $p<0.001$). BDI, HAM-D score measured depressive symptoms that were not independent of the outcome and the PDI is an outcome of depression in psoriatic patients, so eventually the BDI, HAM-D and PDI were excluded. History of depression, systemic treatment, psoriatic arthropathy and PASI scores were entered into the binary logistic regression with backward stepwise methods with NP group as reference category. History of depression (OR=8.065, $p<0.05$) and PASI scores (OR=1.128, $p<0.001$) were found to be the independent predictors of 'any kind of depressive disorder' (AD) in patients with psoriasis. No significant result was found for 'other psychiatric disorders' (OP) group.

The Pearson correlation showed that there was a positive correlation between the severity of depression (BDI, HAM-D) and severity of psoriasis (PASI). The correlation was statistically significant ($r=0.406$, $r=0.42$, $p<0.001$, Table 4).

Relationship between severity of depression, severity of psoriasis and health-related quality of life

There was a statistically significant positive correlation between BDI, HAM-D and PDI ($r=0.544$, $r=0.532$, $p<0.01$, Table 4). Linear regression was performed on the HRQoL by severity of depression. It was found that severity of depression (BDI, HAM-D) accounted for 71.4% and 69.8%

Table 1. Psoriasis-related characteristics of the sample (n=221)

Variable	n	%
Duration of psoriasis (yrs), Mean (SD)	10.37 (5.84)	
PDI, Mean (SD)	19.85 (19.12)	
PASI scores, Mean (SD)	7.94 (9)	
Clinical severity*		
Mild	153	69.2
Moderate	42	19.0
Severe	26	11.8
Types of psoriasis		
Plaque psoriasis	218	98.7
Stable	203	91.9
Unstable	2	0.9
Guttate psoriasis	13	5.9
Pustular psoriasis	2	0.9
Erythrodermic	1	0.5
Arthropathy	24	10.9
Topical treatment	216	97.7
Systemic treatment	36	16.3
Oral treatment	31	14.0
Phototherapy	15	6.8
Biologics	1	0.5

Abbreviation: SD: standard deviation; PDI: Psoriasis Disability Index; PASI: Psoriasis Area Severity Index
*clinical severity: mild (PASI score 0-11), moderate (12-18), severe (>18)

Table 2. Point prevalence of the psychiatric disorders in the sample (n=221)

Psychiatric disorders	n	%
MDE current	2	0.9
MDE recurrent	40	18.1
MDE + dysthymia	3	1.4
Minor depressive disorder	6	2.7
Dysthymia	1	0.5
MDE + GAD	6	2.7
Schizophrenia	1	0.5
Delusional disorder	1	0.5
Panic disorder	1	0.5
Social Phobia	2	0.9
GAD	11	5.0
Anxiety disorder, not otherwise specified	2	0.9
No psychiatric diagnosis (NP)	145	65.6

Abbreviation: MDE: major depressive episode; GAD: generalized anxiety disorder

Table 3. Comparison between the AD and NP groups in terms of clinical characteristics (n=203)

Variable	NP (n=145) Mean (SD)	AD (n=58) Mean (SD)	Group difference
Duration of psoriasis (yrs)	10.44 (6.17)	10.24 (5.23)	p=0.816
Psoriasis Area and Severity Index scores	5.53 (7.94)	14.01 (8.98)	p<0.001
Psoriasis Disability Index scores	12.70 (14.61)	37.09 (18.06)	p<0.001
Beck Depression Inventory scores	1.37 (2.59)	21.12 (8.11)	p<0.001
Hamilton Depression Rating Scale scores	0.28 (1.71)	12.36 (5.57)	p<0.001

of the total variance of HRQoL (PDI) in depressed psoriatic patients (Table 5). PASI had a statistically significant positive correlation (r=0.525, p<0.001) with PDI (Table 4). Severity of psoriasis (PASI) accounted for 56.1% of the total variance of HRQoL (PDI) in psoriatic patients by linear regression (Table 5).

Discussion

In our study, the point prevalence of any kind of depressive disorder was 26.4% which was consistent with the previously reported range from 9.7% to 62%.[3,7] One mental health survey in Hong Kong showed that in the general population, lifetime prevalence of depression in male and female was 8.14% and 16.13% respectively.[20] Our study showed that lifetime prevalence of 'any kind of depressive disorder' in male and female psoriatic patients was 26.3% and 37.8% respectively. Our results were comparable with published data in that the depression rates in patients with psoriasis were much higher than the depression rates in the general population.

Table 4. Measure of association between variables which significantly differentiate the AD and NP groups

Variable type		Continuous				Categorical		
		PDI	**BDI**	**PASI**	**HAM-D**	**HD**	**PA**	**ST**
Continuous	**PDI**	--	0.544*** p=0.000	0.525*** p=0.000	0.532*** p=0.000	0.175** p=0.009	0.061 p=0.363	0.294*** p=0.000
	BDI		--	0.406*** p=0.000	0.828*** p=0.000	0.245*** p=0.000	0.115 p=0.088	0.183** p=0.006
	PASI			--	0.420*** p=0.000	0.125 p=0.063	0.330 p=0.625	0.393*** p=0.000
	HAM-D				--	0.210 p=0.002	0.192** p=0.004	0.219** p=0.001
Categorical	**HD**					--	p=0.211 (FET)	p=1.000 (FET)
	PA						--	χ^2=12.715 p=0.067
	ST							--

Notes: PDI: Psoriasis Disability Index; BDI: Beck Depression Inventory; PASI: Psoriasis Area Severity Index; HAM-D: Hamilton Depression Rating Scale; HD: history of depression; PA: psoriatic arthropathy; ST: systemic treatment

*p<0.05; **p<0.01; ***p<0.001

For measuring the association between 2 continuous variables, the Pearson correlation is applied. Both the correlation and the corresponding p-value are reported in the cell.

For measuring the association between 2 categorical variables, the Pearson chi-square or Fisher exact test (FET) is applied. The corresponding p-value is reported in the cell.

For measuring the association between a continuous and categorical variable, the normal approximation of Pearson correlation is applied. Both the correlation and the corresponding p-value are reported in the cell.

Table 5. Model summary of linear regression on health-related quality of life by severity of depression and severity of psoriasis

Explanatory variables	Entire sample (n=221)	Any depression (AD) (n=58)
1. Severity of depression (BDI)	R^2 = 52.0% F-value = 240.584 P = 0.000*	R^2 = 71.4% F-value = 146.003 P = 0.000*
2. Severity of depression (HAM-D)	R^2 = 46.9% F-value = 196.450 P = 0.000*	R^2 = 69.8% F-value = 135.294 P = 0.000*
3. Severity of psoriasis (PASI)	R^2 = 56.1% F-value = 283.298 P = 0.000*	R^2 = 68.8% F-value = 129.155 P = 0.000*

Notes: Dependent variable: health related quality of life (PDI); BDI: Beck Depression Inventory; HAM-D: Hamilton Depression Rating Scale; PASI: Psoriasis Area and Severity Index
*p<0.001

The mean BDI scores of AD group in our study was 21.12 (SD=8.11). A previous study interpreted mean BDI scores of 10.9 (SD=8.1) as minimal depression, 18 (SD=10.2) as mild depression, 25.4 (SD=9.6) as moderate depression and 30 (SD=10.4) as severe depression.[21] The mean BDI score of depressed patients in our study fell between minimal to moderate depression. The independent predictors of depression in patients with psoriasis which were statistically significant in our study were the past history of depression and a high PASI score. Previous studies have shown variable correlation, from "no" to moderate, between clinical severity of psoriasis and depression in people with psoriasis.[2,4,6,7] Our study found that psoriatic severity was a weak predictor of depression (OR=1.128, p<0.001). It has also been reported that depression and psoriatic arthropathy was significantly correlated.[22] Our study found a difference between the AD and NP groups with regard to psoriatic arthropathy (17% vs 9%), yet the difference was only marginal for statistical significance (p=0.093). It was uncertain whether this negative result was due to the lack of statistical power resulting from the small number of subjects with arthropathy recruited in the current study.

Our study, in agreement with most other studies, found a major difference in the magnitude of PDI between the AD and NP groups. The PDI scores of the AD group are 2.9 times those of the NP group. It was found that severity of depression (BDI) accounted for 71.4% of the total variance of health related quality of life (PDI) in depressed psoriatic patients in linear regression. Thus, depression may have significant impact on the HRQoL in patients with psoriasis. Our study also showed that PDI scores of the AD group patients are significantly higher than OP group patients (p=0.007). This result was in agreement with a previous study,[7] and provided further evidence that the impact of depression on HRQoL in patients with psoriasis is stronger than other psychiatric disorders. Our study showed a correlation between quality of life (PDI) and clinical severity of psoriasis (PASI) (r=0.525, p=0.000) which agreed with some western studies while other studies showed only a weak correlation or even no correlation.

In this study, 84.5% of the depressed patients were not receiving psychiatric treatment at the time of the interview. A similar situation has also been reported elsewhere for Caucasian psoriasis patients, the majority of whom had undiagnosed depression and did not receive proper psychiatric treatment. Studies reported that only 39% of patients who had psoriasis with clinically relevant distress were identified correctly by dermatologists.

When physicians did identify patients as clinically distressed (anxiety or depression), further action to address such difficulties through referral to appropriate specialists was taken in only one third of cases.[4,23,24] Findings of this study suggested that training in the diagnosis and referral of psoriatic patients with depression in our local setting should be enhanced .

Limitations of the study

There are several limitations of the study. Firstly, only those patients who attended the public outpatient dermatology clinic were recruited. It was not sure that whether the same applied in other patients in the private sector, which might have a different socio-demographic background. Secondly, the assessment of clinical severity, using PASI, was administered by different dermatologists. Inter-observer variation in PASI scoring was not specifically addressed in the current study. Thirdly, although clinical correlates have been identified, no temporal or possibly causal relationship between depression and clinical correlates could be demonstrated due to the cross-sectional nature of the study. A prospective cohort design should be carried out to investigate the risk factors for depression in future studies. Fourthly, the sample size did not allow further analysis of those factors of infrequent occurrences such as arthropathy.

Conclusion

The point prevalence of depression in patients with psoriasis is found to be 24.6% in our sample of patients attending public dermatological clinics in Hong Kong, and it is often unrecognized and untreated. Depression has a major impact on the HRQoL of patients with psoriasis. History of depression and severity of psoriasis were found to be the independent predictors of depression in patients with psoriasis. Awareness of depression and its impact to patients with psoriasis should be enhanced.

Disclaimer: *All opinions expressed are the authors' and do not represent the views of their affiliated organizations, Colleges or specialties. These recommendations contain information relating to the general principles of medical management that should not be constructed as specific instructions for individual patient or physician therefore the care providers should make their own judgment in providing treatment to their patients.*

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