行政院國家科學委員會補助專題研究計畫成果報告

計劃名稱 ：

精神疾病求治者之體質指數分布

計畫類別：個別型計畫
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中文摘要

目的:許多研究指出，重大精神病病患體重過重或是肥胖的比例，比一般人口來得高。此肥胖現象與長期使用精神藥物及其他因素有關，並明顯影響重大精神病病患預後及健康狀態。本研究主要目的在於了解台灣精神疾病求治者之體質指數分布及肥胖現象。

方法:研究期間於大台北都會區之數所綜合醫院及一所精神專科醫院，收集 636 位精神疾病門診及日間病房求治病患(男性 288 位)，並依精神疾病診斷分成精神分裂症、雙相情感障礙症、鬱症及其他精神疾病四組。

結果:樣本平均年齡為 36.8 ± 11.3 歲，平均體質指數為 23.2 ± 4.1 kg/㎡。精神分裂症及雙相情感障礙症患者之平均體質指數明顯較其他兩組為高。若考慮性別差異，於全體樣本中，男性之平均體質指數明顯比女性為高(男性 23.9 kg/㎡、女性 22.6 kg/㎡)。但於四組病患當中，此性別差異僅存在鬱症及其他精神疾病二組。

結論: 精神分裂症及雙相情感障礙症患者的肥胖現象較其他兩組明顯,且於此兩組中體質指數分布並無明顯性別差異。此需考慮長期使用抗精神藥物及情緒穩定藥物之影響。

關鍵詞：體質指數、肥胖、精神疾病

英文摘要

Objectives: Patients with mental illness were reported to have higher prevalence of obesity. Obesity may be caused by the long term usage of psychotropic medications and other factors and will deteriorate the prognosis and health status of these patients. The objective of this study was to estimate the distribution of body mass index (BMI:kg/㎡) in Chinese patients with mental illness in Taiwan.

Method: 636 patients (288 men) were interviewed at psychiatric outpatient clinics. For comparison, patients were divided into four diagnostic groups.

Results: Patients had a mean age of 36.8 ± 11.3(SD) years, with a mean BMI of 23.2 ± 4.1 kg/㎡. Patients with schizophrenia and bipolar disorders had significantly higher mean (BMIs. Among all patients, men had significantly higher mean BMI than women had (23.9 kg/㎡ vs. 22.6 kg/㎡, respectively). However, such gender difference only existed in patients with depressive disorders and other disorders.

Conclusions: Patients with schizophrenia and bipolar disorders were more obese than patients with other mental illness. There was no gender difference in the distribution of BMI among patients with schizophrenia and bipolar disorders. It suggested that weight gain induced by antipsychotics and mood stabilizers is important.

Keywords: Body Mass Index; Obesity; Mental illness

報告內容

1.Introduction

Weight change among patients with mental illness was mentioned before the wide utilization of current psychotropic medication (Post, 1956). But this issue has not been brought into clinical focus until recent years. In recent years, the morbidity and mortality rate of patients with major psychiatric disorders including schizophrenia and bipolar disorder decreased significantly owing to the progression of treatment and the effect of the deinstitutionalized process (Davis, 1975; Craig et al., 1981; Kuo et al., 1998). In Taiwan, the trend is similar to Western industrialized countries after the enactment of the Mental Health Act in 1990 (Kuo et al., 1998). There are more and more patients with major psychiatric disorders living in community and encountering common public health problems in general population. Therefore, the issue concerning about body weight gain in psychiatrically ill patients is stressed again (Devlin et al., 2000).

Among patients with mental illness, individuals with schizophrenia were noted to be more obese (Allison et al., 1999a). Regarding patients with major psychiatric disorders, the prevalence of overweight and obesity is estimated from 40% to 62% (Silverstone et al., 1988; Kendrick, 1996; Allison et al., 1999b). Among all the risk factors contributing to body weight change, the role of psychotropic agents, especially antipsychotic medications, is emphasized (Stanton, 1995; Green et al, 2000). Studies suggested that 40% to 80% of patients taking antipsychotic medication experience weight gain that exceeds ideal body weight by 20% or greater (Umbricht et al., 1994; Masand et al., 1999). For patients with major psychiatric disorders other than schizophrenia, reports about their body weight change are scant. However, psychotropic medications including antipsychotics, mood stabilizers, and antidepressants do be an integral part of the therapeutic program for those patients and those medications also have the untoward side effect to induce body weight gain (Berken et al., 1984; Gelenberg et al., 1989; Ackerman et al., 1998).

Obesity makes a great impact on health. Mortality and morbidity are increased among obese individuals (Troiano et al., 1996). The relationship between obesity and overall mortality is enhanced among young and middle-aged adults (Stevens et al., 1998). Obesity is a main risk factor for many physical illness including hypertension, dyslipidemia, diabetes mellitus, coronary heart disease, congestive heart failure, stroke, gallstones, osteoarthritis, sleep apnea, and certain types of cancer (Pi-Sunyer, 1998). Therefore, obesity has been treated as a chronic disorder and a serious public health problem.

Except for medical problems, obese individuals face negative attitudes existing in current society. These attitudes result in disadvantages encountered in real life (Sargent et al., 1994). For psychiatrically ill obese patients, these disadvantages would be more serious. Aware of possible body weight gain induced by psychotropic agents, patients with mental illness may be not adherent to medical treatment and are predisposed to relapse (Bernstein, 1987).

The topics concerning obesity among patients with mental illness and weight gain associated with psychotropic agents have been extensively reviewed in Western countries (Stanton, 1995; Allison et al., 1999b; Green et al., 2000). But it should be cautious to apply these results to population with different races and cultures. In Taiwan, Yang and colleagues reported the body weight change in 101 chronic psychotic female inpatients during 15-month hospitalization (Yang et al., 1997). The prevalence of obesity increased from 13.8% to 27.7%. However, to our best knowledge, there is no study concerning body weight change in noninstitutionalized psychiatrically ill patients reported in Taiwan.

The aim of this study was to estimate and compare the relative body weight (represented by body mass index, BMI: kg/㎡) of Chinese patients with different mental illness in Taiwan. We chose patients from community in order to weaken the influence of institutionalization and for comparison. The result of this estimation and comparison is useful in future healthy policy. For example, if there are no difference in the distribution of BMI between patients with different

mental illness and general population, then weight gain associated with medical treatment should not be overstressed. On the other hand, if the distribution of BMI in Chinese patients in Taiwan is similar to that in Western countries, then further intervention to manage obesity should be done to improve patients' healthy status.

2.Methods

This study was conducted in psychiatric outpatient clinics (including psychiatric day hospitals) located in Taipei, Taiwan. Among these hospitals, one (Taipei City Psychiatric Center) is a psychiatric teaching hospital providing comprehensive psychiatric services and is assigned as a center for the northern Taiwan catchment region. Other psychiatric outpatient clinics and psychiatric day hospitals are belonged to general hospitals located in different areas in Taipei. Subjects from different sources may be more representative, at least, for patients living in metropolitan community in Taiwan.

Patients with major psychiatric disorders including schizophrenia and bipolar disorders who visited psychiatric outpatient clinics in assigned hospitals from Aug, 2001 to May, 2002 were eligible for this study. Patients with depressive disorders, including major depressive disorder, dysthymic disorder, and depressive disorder not otherwise specified, were also enrolled because there are substantial reports concerning weight gain associated with antidepressants (Berken et al., 1984; McElroy et al., 1995; Sussman et al., 1998). At meantime, patients with other psychiatric disorders, mainly anxiety disorders, were collected for comparison. Further analysis was made within these four diagnostic groups.

For not confounded by normal developmental process, patients were at least 15 years of age. Women were not pregnant. Patients with primary psychiatric diagnoses of organic mental disorders and substance use disorders were excluded.

After receiving a complete description of the study, patients who agreed to participate in this study were interviewed by experienced psychiatrists and trained assistants. Psychiatric diagnoses were made according to the diagnostic criteria of DSM-IV (American Psychiatric Association, APA. 1994). Body mass index was measured and the sociodemographic and clinical variables were collected at the time of assessment. Patients' global assessment of functioning was evaluated according to the LKP Scale (Levenstein et al., 1966). The LKP Scale is used for rating overall functioning and takes into account the following areas of functioning: work and social adaptation, life disruption, self-support, symptoms, relapse, and rehospitalization. In previous studies, this eight-point scale was divided into three broad categories which were designated as good functioning (scores of 1 or 2), moderate impairment (scores of 3 to 6), and uniformly poor overall functioning (scores of 7 or 8) (Harrow et al., 1990; Goldberg et al., 1995).

There were 636 patients undergone complete assessment in the study period. Among them, 288 (45.3%) were men and 348 (54.7%) were women. There were 257 (40.4%) patients with schizophrenia, 83 (13.1%) patients with bipolar disorders, 114 (17.9%) patients with depressive disorders, and 182 (28.6%) patients with other psychiatric disorders.

Four-group comparison, between patients with schizophrenia, bipolar disorders, depressive disorders, and other psychiatric disorders, were made by using the chi-square test when explanatory variables were categorical, and using the analyses of variance (ANOVAs) when variables were continuous. Post hoc test with method of Bonferroni was also conducted.

3.Results

The demographic characteristics and the distribution of BMI of the 636 patients divided into four diagnostic groups in this study are summarized in Table 1. For all patients in this study, the mean age was 36.8 ± 11.3 years, the length of psychiatric illness at the time of recruitment averaged 8.6 ± 8.6 years, and the mean BMI was 23.2 ± 4.1 kg/㎡. According to the LKP Scale, 311 patients (48.9%) were considered to have a good overall functioning, 293 patients(46.1%) had a fair to mildly impaired functioning, and only 32 patients(5.0%) had poor functioning.

Between these four diagnostic groups, there were no differences in their mean ages. Female patients with depressive disorders outnumbered male patients with depressive disorders. But that is compatible with most community studies (Paykel, 1992; Kessler et al., 1994). The average length of illness in four groups were different but were all longer than one year. Therefore, patients recruited in the study represented the patients who suffered from chronic psychiatric illness but were stable enough to live in community. Patients with schizophrenia and bipolar disorders had statistically ($p < 0.01$) and clinically significantly higher mean BMIs than patients with depressive disorders and other psychiatric disorders.

On average, male patients had significantly higher mean BMI than female patients had (23.9 kg/㎡ vs. 22.6 kg/㎡, respectively). However, such difference in the distribution of BMI between men and women only existed in patients with depressive disorders and other psychiatric disorders.

Obesity is generally defined best in relative body weight, especially the BMI. Clinical guidelines recommended by the World Health Organization and the National Heart, Lung, and Blood Institute in America define "overweight" as a BMI of 25-29.9 kg/㎡ and obesity as a BMI of 30 kg/㎡ and greater (Pi-Sunyer, 1998; WHO,1998). Using this classification, 137 patients(21.5%) were overweight and only 38 patients(6.0%) were considered obese.

Considering ethnical factors, another classification has been suggested to define "overweight" as a BMI of 25-28 kg/㎡ and obesity as a BMI of 28 kg/㎡ and greater in Taiwan (Huang et al., 1992). According to this classification, there were 81 obese patients(12.7%) noted in the study. The prevalence of obesity in is summarized in Table 2. Among them, a fifth of patients with schizophrenia and bipolar disorders were obese.

Besides, the difference in overall functioning between obese and non-obese patients was statistically significant. According to the LKP Scale, 50.5% of non-obese patients with mental illness were considered to have good functioning, but only 38.3% of obese patients had good functioning.

4.Discussion

The results of this study demonstrate the patients with schizophrenia and bipolar disorders were more obese than patients with depressive disorders and other psychiatric disorders. In Western noninstitutionalized patients with schizophrenia, the mean BMI was reported from 26.14 ± 4.60 kg/㎡ to 26.79 ± 5.05 kg/㎡ in male patients and 27.29 ± 7.17 kg/㎡ to 27.60 ± 7.68 kg/㎡ in female patients (Allison et al., 1999a). There were no data available to be compared with other diagnostic groups. However, the difference might be partially accounted by ethnic variation.

Compared with the distribution of BMI among general population with age of 20 to 64 years in Taiwan (Huang et al., 1992), patients with schizophrenia and bipolar disorders had higher mean BMIs and patients with depressive disorders and other psychiatric disorders had similar mean BMIs. To those patients with chronic major psychiatric disorders, psychotropic medications were considered to play an important role in body weight gain.

Among typical antipsychotics, the low-potency phenothiazines are most often associated with weight gain. In recent years, novel antipsychotics are noted to produce a greater weight gain. Studies on weight change during antipsychotic treatment showed a mean weight after ten weeks of treatment of 4.45 kg with clozapine, 4.15 kg with olanzapine, 2.10 kg with risperdone, and 1.08 kg with haloperidol (Allison et al., 1999b). Those atypical antipsychotics were introduced in Taiwan but were not used so extensively due to some restrictions under the provider payment of National Health Insurance. It might be another reason accounting the difference of the distribution of BMI between Chinese and Western patients.

For patients with bipolar disorders who were treated with mood stabilizers, weight gain of at least 5% was reported in nearly a half patients with lithium and in one quarter patients with anticonvulsants (Ackerman et al., 1998). Clinically, most patients with bipolar diorders were

concomitantly treated with antipsychotics. Therefore, their body weight gain might be also associated with antipsychotics.

Treatment with tricyclic antidepressants is associated with significant weight gain (Berken et al., 1984). But newer antidepressants are generally not associated with weight gain (Sussman et al., 1999). In fact, some newer antidepressants as selective serotonin reuptake inhibitors have been applied for the treatment of obesity and are effective (Golstein et al., 1994).

The mechanism of weight gain associated with psychotropic medications is still poorly understood. Several possibilities such as decreased activity due to sedative effects, resetting weight control, and change in neurotransmitters have been suggested (Stanton, 1995). Sex hormones as prolactin is thought to play a role in moderating the effect of psychotropic medications on body weight. It was evident in the study reported by Allison and colleagues (Allison et al., 1999a). In our study, the similar picture can be observed that gender differences in mean BMIs of four groups lessen from patients with depressive disorder (2.6 kg/㎡) to patients with bipolar disorders (0.0 kg/㎡). That may imply that female patients are more sensitive to the side effect of weight gain once it happens.

The overall functioning of obese patients was not so good as that of non-obese patients. Besides the psychosocial disadvantages, weight gain will cause several physical problems. In a five-year naturalistic study, patients treated with clozapine experienced marked weight gain and were at increased risk for developing diabetes (Henderson., 2000). In the long run, medical morbidity and mortality will increase and hamper patients' prognoses.

There were several shortcomings in our study and it should be cautious to apply the results. For a hospital-base study, selected samples were not representative enough for community population. Variables of medical treatment including type of medicine and length of medical treatment were not controlled. Other factors contributing to the change of body weight including diets and activities were not discussed.

As a preliminary study, we found that the mean BMI and the prevalence of obesity of patients with schizophrenia and bipolar disorders were significantly higher. Clinical attention to this phenomenon ought to be called and further systematic studies shall be planned to confirm above findings.

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Table 1. Demographic characteristics and BMIs in 636 Chinese patients with mental illness

	Schizophrenia N=257	Bipolar disorders N=83	Depressive disorder N=114	Oth
Sex ratio (M/F)*	120/137	45/38	36/78	
Age (years)	37.3±10.0	37.5±11.6	35.0±11.8	
Length of Illness (years)*	12.5±8.7	12.2±9.0	3.6±5.4	
BMI (kg/㎡)*	24.6±4.3	23.9±4.7	21.7±3.2	

Table 2. Prevalence of Overweight and Obesity in 636 Chinese patients with mental illness

	Schizophrenia N=257	Bipolar disorders N=83	Depressive disorder N=114	Other di N
Overweight (BMI=25-29.9kg/㎡)	80 (31.1%)	16 (19.3%)	17 (14.9%)	24
Obesity (BMI>30kg/㎡) By WHO classification	24 (9.3%)	9 (10.8%)	2 (1.8%)	3
Obesity (BMI>28kg/㎡) By Huang's classification	52 (20.2%)	17 (20.5%)	4 (3.5%)	8

計劃結果自評:

1.原計劃預計收集 800 名個案，但因個案收集涵蓋大台北地區數家醫院，去除資料不全、遺失者，僅得 636 名個案進入最後分析。樣本數減少可能影響最後分析之效度。

2.本研究樣本為門診及日間病房求治病患，僅能代表特定樣本族群，若預引用於社區個案，仍需小心並設計進一步較大規模之社區流行病學調查。

3.本研究為橫斷面之研究，對於與肥胖相關之因素，無法做因果關係之推論。但本研究之結果支持進一步追蹤研究之必要性。

4.本研究結果僅比較收集樣本間之差異，至於是否與社區母群體有體質指數及肥胖盛行率上之差異，仍須有相應之資料庫以供比較。或於下一步研究中設計收集對照組。

5.本研究結果可供進一步對重大精神病病患之肥胖現象研究之前導基礎。