

ORIGINAL ARTICLE

Non-psychiatric Physicians' Knowledge, Attitudes and Behavior Toward Depression

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Background/Purpose: Depression is a major health concern, often treated by non-psychiatrists. This study assessed self-reported knowledge, attitudes and treatment practices of non-psychiatric physicians in the recognition and management of depression.

Methods: Survey questionnaires were given to non-psychiatric physicians who attended a depression training program. We asked physicians about their current clinical practice, knowledge, confidence, attitudes and perceived barriers to care regarding recognition and management of patients with depression.

Results: Of 524 eligible non-psychiatric physicians, 375 (72%) completed surveys. The majority of physicians held a strong sense of responsibility for managing depression, although they provided treatment to only a small proportion of depressed patients. Most of them were not confident treating depressed patients, and they reported that incomplete knowledge and training were major barriers that limited their involvement. The patient and organization barriers were not related to reported management, but the physician barriers (lack of skills and knowledge in managing depression) were related to reported rate of treatment. Age, prior depression training, and education were major contributing factors to domains of knowledge, attitude and behavior, in terms of the number of domains involved. Family physician orientation was associated with higher score on knowledge scale, but not with other variables of attitude and behavior.

Conclusion: Our study suggests that non-psychiatrists may also play a role in the care of depression, but identifying and managing depression can be a challenge to them. Attitudinal barriers, confidence, and knowledge of treatment may compromise the physician's ability to manage depression. Future interventions and educational efforts need to address each of these issues. [*J Formos Med Assoc* 2008;107(12):921-931]

Key Words: attitude, depression, knowledge, physician, practice

According to the Global Burden of Disease project,¹ unipolar depression, which was the fourth leading cause of disability worldwide in 1990, will be second only to heart disease in 2020. Depressive disorders cause substantial suffering for patients and their families, are associated with lost productivity, and markedly increase the risk of suicide. Furthermore, the presence of depression puts

persons with comorbid medical conditions, such as coronary heart disease, at increased risk of death.²⁻⁵ Inadequate treatment of depression results in unnecessary functional impairment and associated costs.^{6,7}

In Taiwan, patients with depression often visit non-psychiatrists. General health care, including visits to specialists, generally performs the role of

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primary care.⁸ As the majority of patients with depression do not seek help from specialist mental health service providers, their care will fall upon non-psychiatrists. Non-psychiatrists are thus the initial case-finders of psychiatric disorders, providers of mental health treatment, or the route to specialist help.⁹ In a large-scale epidemiologic study in a general medical setting in Taiwan, prevalence of depression was found to be 6.8% and associated with significant disability.⁸ Detection rate by non-psychiatric physicians was much lower than that reported in Western countries.¹⁰ For up to 12 months' follow-up, antidepressant medications were prescribed for only 8% of depressed patients, all at inadequate dosage and duration.¹¹ A 1-year follow-up outcome study found that more than one-third of depressed patients remained ill.¹¹ In another study of 200 patients at a general hospital family medical clinic in Taiwan, the same magnitude of psychiatric morbidity and low detection rates by general medical physicians were reported.¹²

Several studies among primary care physicians have shown that knowledge and attitudes toward mental illness are associated with decreased recognition of depression.¹³⁻¹⁵ Little is known about non-psychiatrists' knowledge, attitudes or behavior toward depression in Taiwan. Therefore, we undertook a descriptive study of general medical physicians' knowledge, confidence, attitudes and current practices regarding the recognition and management of depression, and their perceived barriers to caring for depressed patients.

Methods

Sample selection

The study physicians were recruited from those who attended the Depression Training Program that was funded by the Department of Health, which provided free training courses to local health care providers in selected regions of Taiwan (Kaohsiung, Taichung, Nantung, Hua-Lien and Taitung) in 2004. The Taiwanese Society of Psychiatry organized the postgraduate educational

program on depression, which consisted of two 1-day workshops (standardized 18-hour training program) provided by psychiatrists. The course was accredited by the Association of Family Medicine and the Taiwanese Society of Psychiatry. To recruit to the course, the local Health Bureau and Taiwanese Society of Psychiatry sent letters to all local health providers in the selected regions. All those interested were invited to participate. In 2004, five courses of the Depression Training Program were held in selected regions of Taiwan: two in the southern, two in the central and one in the eastern region. A total of 524 general medical physicians participated.

Assessment

Before the training program, physicians were invited to complete self-administered questionnaires. Based on prior research, we assembled items to measure the following constructs.

(1) Clinical background questionnaire and self-reported practices

We collected demographic data of physicians and their clinical background, such as age, gender, education, specialty, type of setting, and perceived adequacy of prior depression training. We also asked physicians about what percentage of adult patients had depression in their clinic in the past 3 months. Physicians also indicated how often they provided five specific treatments, including: (a) prescription of antidepressants; (b) prescription of other medication; (c) counseling; (d) education on changing lifestyle; and (e) referral to a mental health specialist (Table 1). Response categories of the five specific treatments were summed for an overall score on reported management; higher scores represent more action taken.

(2) Knowledge

The 22-item knowledge scale was an aggregated measure based on a 12-item knowledge scale developed by Meredith et al¹⁶ and 10 additional items. As shown in Table 2, there were three subscales that measured: (a) general knowledge of depression (11 items); (b) knowledge of psychotherapy

Table 1. Physicians' reported management of patients with depression*

	Prescription of antidepressants (n=366)	Prescription of other medication (n=369)	Counseling (n=360)	Suggested lifestyle changes (n=367)	Referral to mental health specialists (n=369)
<10%	248 (67.8)	270 (73.2)	232 (62.9)	157 (42.8)	191 (49.1)
11–20%	33 (9.0)	15 (4.1)	20 (5.4)	23 (6.3)	21 (5.7)
21–30%	28 (7.7)	16 (4.3)	14 (3.8)	23 (6.3)	28 (7.6)
31–40%	10 (2.7)	9 (2.4)	14 (3.8)	17 (4.6)	10 (2.7)
41–50%	11 (3.0)	10 (2.7)	16 (4.3)	30 (8.2)	27 (7.3)
51–60%	10 (2.7)	13 (3.5)	20 (5.4)	27 (7.4)	21 (5.7)
>60%	26 (7.1)	36 (9.8)	53 (14.4)	90 (24.5)	81 (22.0)

*Data presented as n (%).

Table 2. Responses to knowledge statements

	Incorrect response (%)
General knowledge	
Maintenance phase of treatment for major depression focuses on preventing recurrence	3.7
Depression: somatic symptoms	4.8
Major depression may recur	5.3
Major depression rarely affects social, family or job function	7.7
Not treat depression, alcohol abuse may complicate	9.3
Severe depression related to biochemical disturbance	9.3
3–4 week trial may be needed to determine antidepressant effectiveness	10.9
Major depression is rare in Taiwan	13.6
Major depression is more common in men than in women	16.8
Dysthymia is mild, brief depression	19.2
Treatment efficacious for elderly	30.9
Pharmacotherapy knowledge	
Clinicians prescribe appropriate doses to less than a third of patients	8.0
Fluoxetine metabolism	24.5
Treatment length of antidepressant after recovery	28.3
When antidepressants should be discontinued as soon as possible if symptoms improve	32.8
Anxiolytics and sedatives have equivalent efficacy in major depression	41.1
SSRIs may have dependency	43.7
TCAs have equivalent side-effect profiles to SSRIs	54.1
Antidepressants rarely have side effects	57.1
Psychotherapy knowledge	
Goal of cognitive therapy is to identify and correct negative thinking	4.3
If psychotherapy has no effect in 6 weeks, medication is recommended	10.9
Psychotherapy with a trained therapist is appropriate as sole treatment for depression that is not chronic, psychotic or melancholic	40.0

(3 items); and (c) knowledge of pharmacotherapy (8 items). Physicians were asked to rate statements as true or false. Correct answers were scored as 1 and incorrect answers as 0. Thus, the

maximum score for the knowledge scale was 22. We then calculated the mean percentage of correct answers for the 22 items and the three subscales.

Table 3. Physicians' confidence in managing depression and perceived barriers to care

Confidence*	Somewhat to very confident (%)
I can diagnose depression	49.9
I can treat depression with medication	38.3
I can treat depression with counseling	28.0
Treating depression via referring to mental health specialists	62.9
Overall, I can manage depressed patients	39.3
Barriers to physicians' management of depression†	Somewhat to a great deal (%)
<i>1. Patient barriers</i>	
Patient or family reluctance to accept diagnosis of depression	81.4
Patient reluctant to comply with antidepressant medications	87.8
Patient reluctant to be referred to psychiatrist	87.6
Might be caused by physical condition	80.3
Medical problems were more pressing	78.4
<i>2. Physician barriers</i>	
Incomplete knowledge of diagnostic criteria	91.3
Incomplete knowledge of available treatments for depression	87.1
Lack of effective treatments	70.9
<i>3. Organizational barriers</i>	
Limited visit time for history taking	86.8
Limited visit time for counseling/education	86.6
Lack of access to psychiatrist or mental health professional	44.2
Poor reimbursement for antidepressants	91.3
Poor reimbursement for counseling	87.1

*Percentages in this section refer to the proportion of physicians who said that they were "somewhat confident" or "very confident"; †percentages in this section refer to the proportion of physicians who said that the barriers affected their management of depressed patients "somewhat" or "a great deal".

(3) Confidence in their skills

This section consisted of five items with which physicians rated their level of confidence in diagnosis, prescribing medication, counseling and education, referral to mental health specialists, and general confidence, on a four-point scale (not at all, slightly, somewhat, or very confident). Item scores were summed, with the scores ranging from 5 to 20. Higher scores reflected greater self-confidence.

(4) Barriers to care

This session consisted of 13 questions about perceived barriers to treating depression. The measure was based on the work of Meredith et al,¹⁶ Richards et al¹⁷ and Olson et al.¹⁸ As shown in Table 3, the potential barriers included items relating to three subscales, including: (a) patient barriers (5 items); (b) physician barriers (3 items);

and (c) organizational barriers (5 items). Providers reported whether they were limited "a great deal", "somewhat limited" or "not at all limited" by each barrier in their care for depressed patients. Item responses were scored from 0 to 2 and summed for the overall 13 items and three subscales; higher scores represented greater barriers.

(5) Attitudes toward depression

Twelve statements about attitude were adapted from the *Depression Attitude Scale*.¹⁹ An additional two statements asked about perceived responsibility for recognition or treatment of depression. General physicians rated their level of agreement with the 14 statements on a five-point Likert scale that ranged from 1 (strongly disagree) to 5 (strongly agree). In order to look for commonalities among items and to reduce the number of variables, item scores on the attitude scale were

Table 4. Attitudes of 374 physicians

	Agree (%)
Factor 1: Positive attitude	
It is my responsibility to recognize depressed patients	94.9
It is my responsibility to treat depressed patients	88.8
It is rewarding to spend time looking after depressed patients	95.5
A practice nurse could be a useful person to support depressed patients	94.9
Factor 2: Helpless attitude	
Depression reflects a characteristic response in patients which is not amenable to change	73.3
Becoming depressed is a way that people with poor stamina deal with life difficulties	68.0
The majority of depression seen in primary care originates from patients' recent misfortunes	57.6
Most depressive disorders seen in primary care improve without medication	53.4
Factor 3: Avoidant attitude	
Working with depressed patients is heavy going	71.2
If depressed patients need antidepressants, they are better off with a psychiatrist than with a general practitioner	50.4
Psychotherapy tends to be unsuccessful with depressed patients	42.4
It is difficult to differentiate whether patients are presenting with unhappiness or a clinical depressive disorder that needs treatment	47.2
It is possible to distinguish two main groups of depression: one psychological in origin and the other caused by biochemical mechanism	75.5
Factor 4: Biomedical orientation	
Antidepressants usually produce a satisfactory result in the treatment of depressed patients in general practice	72.2
It is possible to distinguish two main groups of depression: one psychological in origin and the other caused by biochemical mechanisms	75.5

subjected to principal components analysis using varimax rotations. As shown in Table 4, a four-factor model represented the attitude scale. Factor scores were then calculated for each new subscale and were used in the statistical analysis.

Statistical analysis

Our aim was primarily descriptive. However, we suspected *a priori* that self-reported attitudes, knowledge, and behavior of physicians might be related to age, education, prior training on depression and specialty of physicians.

All analyses were performed using SPSS version 12.0 (SPSS Inc., Chicago, IL, USA). Data were analyzed using the χ^2 test for categorical variables and the independent Student's *t* test for continuous variables. Correlations were examined by Spearman's correlation analysis. Further multiple regression analysis was used to explore the

effects of the characteristics of physicians and practice on self-reported individual domains of knowledge, attitudes, perceived barriers, confidence, and reported management.

Results

Data were collected by self-administered survey of the eligible participants before implementation of the training course. The confidential survey took 15–20 minutes to complete. Seventy-two percent ($n = 375$) of the 524 eligible general medical physicians returned completed questionnaires.

Provider demographics and practice characteristics

Of the 375 physicians, 48.5% were from the southern region, 40.0% from the central region,

and 11.5% from the eastern region of the country. Most physicians were male (93.6%), with a mean \pm standard deviation (SD) age of 50.6 \pm 11.1 years. Forty-nine physicians (13.1%) received postgraduate education. Most (84%) practiced in a primary care setting (79.2% self-employed practice and 4.8% government health station), 13.1% worked at regional hospitals, and 2.9% worked at medical centers. More than half (55.8%) of non-psychiatric physicians were in solo practice and 20.4% were in two-physician practices. Of the 375 physicians, 169 (45.2%) had family physician (FP) board, 154 (41.2%) had another specialty board (e.g. internists, surgeons, obstetricians and gynecologists) and 51 (13.6%) had no specialty board. Regarding the median patient volume in a typical half-day clinic, 55.0% saw fewer than 30 patients, 19.4% saw 31–40 patients, 11.1% saw 41–50 patients, and 14.5% saw > 50 patients. FPs were older than non-FPs, with a mean age of 52.4 \pm 10.4 and 49.0 \pm 11.4 years, respectively ($p=0.003$). The other demographic and practice characteristics did not differ between FPs and non-FPs.

Most physicians rated their training on depression as inadequate (67.5%), and felt that they received less training on depression compared with other diseases (81.6%). We found that those who were younger and received higher education were more likely to report that their prior education in assessment and treatment of depression were adequate. Specialty was not associated with perceived adequacy of prior depression training.

Current clinical practice

On average, 80% of physicians reported that < 10% of their patients had depression in the past 3 months. As shown in Table 1, physicians treated only a minority of their patients who had depressive disorder. For instance, 67.8% reported that they prescribed antidepressants to < 10% of those with depression and 62.9% reported that they offered counseling to < 10%.

Physicians were asked to name the medication they commonly used for treating depression. Selective serotonin reuptake inhibitors (SSRIs) were by far the most commonly mentioned (41.9%).

Fluoxetine was the most common (38.9%), followed by sertraline (10.8%), paroxetine (5.1%) and fluvoxamine (1.1%). Other antidepressants mentioned by physicians were imipramine (11.1%), trazodone (9.7%), venlafaxine (4.3%) and moclobemide (1.1%). More than half the physicians (52.5%) did not know the name of the drug that they used for depression (FP *vs.* non-FP: 46.7 *vs.* 57.3%, $p < 0.05$).

Knowledge of depression

Overall, physicians answered 78.3% of our knowledge questions correctly. Mean percentage of correct answers was higher for subscales on general knowledge of depression (88.0 \pm 12.2) and knowledge of psychotherapy (81.6 \pm 22.1), in comparison with subscores on knowledge of pharmacotherapy (63.8 \pm 21.1). As shown in Table 2, many physicians responded incorrectly to the following statements: anxiolytics and sedatives have equivalent efficacy in major depression (41.1%); SSRIs may lead to dependence (43.7%); antidepressants should be discontinued as soon as possible (32.8%); tricyclic antidepressants (TCAs) have equivalent side-effect profiles to SSRIs (54.1%); and antidepressants rarely have side effects (57.1%).

Physicians who knew the name of the antidepressant achieved higher scores on the overall knowledge scale (mean percent correct: 82.2% *vs.* 74.8%), subscales of general knowledge (90.5% *vs.* 85.8%) and pharmacotherapy knowledge (71.1% *vs.* 57.1%) (all $p < 0.0001$). Physicians who had higher scores on the knowledge scale were more likely to have overall treatment responses for depression (Spearman's $r=0.29$, $p < 0.0001$).

Confidence in their skills

With regard to self-reported confidence in evaluating depression, only half the physicians were confident in diagnosing depression, more than one-third were confident in managing depression with pharmacologic treatment, and only 28% felt confident in delivering nonpharmacologic interventions (Table 3). Mean (\pm SD) score for all confidence items was 12.0 \pm 3.0. Confident physicians were more likely to achieve a higher knowledge

score ($r=0.14$, $p=0.015$) and provide treatment to patients with depression ($r=0.23$, $p<0.0001$).

Barriers that limit care

The patient, physician and organizational barriers that limit physicians' ability to recognize or intervene are summarized in Table 3. The most common barriers to providing optimal treatment were concerns related to reimbursement (91.3%) and inadequate knowledge of diagnostic criteria (91.3%), while the least common was unavailability of mental health professionals (44.2%). The perception of physician barriers was negatively associated with knowledge scores ($r=-0.15$, $p<0.005$) and confidence level ($r=-0.39$, $p<0.0001$). As expected, the perception of high physician barrier score was associated with low rates of reported management ($r=-0.18$, $p<0.001$). On the other hand, neither patient nor organizational barriers were significantly associated with any of the above specific characteristics.

Attitudes toward depression

Principal components analysis identified that four dimensions of attitudes toward depression were measured by the *Depression Attitude Scale*. Table 4 shows the questions that comprised each factor and the percentage of agreement with the item.

Factor 1 indicated physicians' "positive attitude" that treatment of depression was rewarding and their own responsibility for diagnosis and treatment, and an attitude that was also related to a belief that practice nurses may be useful for supporting depressed patients. Factor 2, "helpless attitude", was best described by the attitude that depression was inevitable for some people with poor stamina (68.0%), not amenable to change (73.3%), and recent misfortunes (57.6%), and that most depressive disorders could be improved without medication (53.4%). Factor 3, "avoidant attitude", indicated the difficulty of diagnosis and treatment, including an item that it was hard to differentiate between patients who presented with unhappiness and those with clinical depression, working with depression was heavy going, psychotherapy tended to be unsuccessful, and

antidepressants are better when given by a psychiatrist. Factor 4, "biological orientation", indicated a belief that antidepressants usually produced satisfactory results, an attitude that was also related to a belief that it was possible to distinguish two main groups of depression: psychological and biochemical.

Physicians' reported overall management score was positively associated with "positive attitude" ($r=0.18$, $p<0.001$), and negatively associated with "avoidant" ($r=-0.11$, $p<0.05$) and "helpless" attitude ($r=-0.21$, $p<0.0001$). "Positive attitude" was also positively associated with knowledge ($r=0.12$, $p<0.05$) and confidence level ($r=0.24$, $p<0.0001$), while "avoidant attitude" was negatively associated with these variables ($r=-0.29$ and -0.25 for level of confidence and knowledge, respectively, all $p<0.0001$).

Effects of physician characteristics on knowledge, attitudes and behavior

Table 5 shows the predictive variables of various domains on physician knowledge, attitude and reported management. The predictive variables included six characteristics of physicians, i.e. age, gender, education, prior depression training, specialty and setting. Many of the variables with significant correlations on univariate analysis were not significant on multivariate analysis, which indicated complex intercorrelations among the variables. Age, prior depression training and education were major contributing factors to the domains of knowledge, attitude and behavior, in terms of the number of domains involved. FP orientation was associated with a higher score on the knowledge scale, but not with other variables of attitude and behavior.

Discussion

The results of the present study suggest that many non-psychiatric physicians are engaged in recognizing or managing depression. Encouragingly, perceived responsibility for the recognition and treatment of depression was endorsed by most

Table 5. Predictive variables of knowledge, attitude, self-confidence and barriers to care and reported management of depression using multivariate regression analysis*†

	Knowledge: overall % correct	Attitudes				Confidence	Barriers of physician	Self-reported management
		Positive	Helpless	Avoidant	Biological			
Age	-0.45 [‡]	-0.15 [‡]	0.34 [‡]	0.17 [‡]			0.13 [§]	-0.22 [‡]
Gender								
Education		0.15 [‡]				0.20 [‡]		0.17 [‡]
Prior depression training				-0.19 [‡]	0.19 [‡]	0.41 [‡]	-0.34 [‡]	0.12 [§]
Specialty (FP vs. non-FP)	0.18 [‡]							
Location (community vs. hospital)								

*Individual self-reported domains of knowledge, attitudes, confidence, barriers and management regressed on demographic characteristics (age, gender, education, prior training on depression) of the physicians and their clinical setting (community vs. hospital); †regression coefficients are shown in the table when the overall model was statistically significant and only the statistically significant ($p < 0.05$) standardized β s are shown; ‡ $p < 0.001$; § $p < 0.05$.

physicians (95 and 89%, respectively). To help patients with depression, physicians first need to perceive this problem to be their responsibility. Personal beliefs and attitudes are key elements that influence physician clinical behavior.²⁰ We found that physicians who reported taking more action on patients with depression were more likely to have a positive attitude, better confidence and knowledge in managing depression, and identify fewer barriers to care, which is consistent with other studies.^{18,21,22}

However, most physicians in our sample were not confident in managing depressed patients (39%), and the majority reported that incomplete knowledge was a major barrier that limited their care of patients with depression (91%). As expected, the subsequent finding that they provided limited treatment for their depressed patients was not surprising. Although the organizational and patient barriers were common barriers and difficult to overcome, they were not related to the reported management, but physician barriers (lack of skills and knowledge in identification and management) were related to reported rate of treatment.

We found that physicians provided treatment to a small proportion of depressed patients. The potential barrier to care was lack of knowledge. Although physicians' overall and general knowledge of depression is good, unfamiliarity with pharmacotherapy may discourage physicians from treating depression. More than 40% thought that

anxiolytics and sedatives have equivalent efficacy in major depression and that antidepressants are addictive. About one third were unaware of the recommended periods considered adequate for a trial of an antidepressant, and they thought that antidepressants should be discontinued as soon as possible. Most physicians were unfamiliar with the side-effect profiles of TCAs/SSRIs. More than half of physicians did not know the name of the antidepressants that they commonly used. These results may reflect insufficient knowledge of pharmacotherapy related to depression, and that educational interventions directed at physicians should include all the above information on treating depression.

The present study showed that some physician characteristics, such as age, education, prior training and specialty had an effect on knowledge, confidence, attitudes and current practices regarding the recognition and management of depression, and the perceived barriers to caring for depressed patients. Gender and setting of practice (community- or hospital-based) did not differ in any of these variables.

Younger age was related to a higher reported proportion of depression management, positive attitudes about depression, identification of less physician barriers to care, and better confidence and knowledge of managing depression. It also possibly reflects changing attitudes toward the evaluation and management of depression, and

older physicians may not have had as much opportunity to receive mental health training since qualifying.

Specialty was independently associated with knowledge. FPs performed better in terms of depression-related knowledge than non-FPs did. The differences we have found may reflect an independent effect of specialty orientation. Family medicine residents in Taiwan require a 2-month training course in psychiatry. Other physicians providing primary care may only have 2–4-week elective courses on psychiatry during internship. Compulsory psychiatric training for FPs may contribute to their better knowledge. However, our results are also noteworthy for the similarities across specialties in reported treatment responses, perceived adequacy of prior training on depression, attitudes towards depression, and the cited barriers to providing optimal care. This study deserves attention because there have been few direct comparisons between FPs and non-FPs,^{23–26} and no such study has ever been done in Taiwan. Glasser and Gravdal surveyed 64 FPs and 66 internists and found that FPs were more active in treating older depressed patients and were more likely to have favorable attitudes than were the internists.²⁴ Banazak found that FPs expressed more confidence in treating depression, compared with internists.²⁶ Gallo et al compared attitudes, knowledge and management among 184 internists and 138 FPs, using a self-report questionnaire.²⁵ Compared with internists, FPs rated themselves as more skilled in the management of depression and reported more active treatment. However, there were no marked differences in knowledge and perceived barriers to care. In our study, specialty was not associated with confidence, attitude and self-reported approaches for depression. Therefore, there is a need for additional studies that attempt to understand the actual care of depression and health outcomes by different specialties.

Prior depression training for physicians appears to be related to their attitudes toward depressed patients, the degree to which they identify physician barriers to the care of depressed patients, and

their confidence in managing depression, which is consistent with other studies.^{18,27,28} In turn, their attitudes toward depression were related to their reported treatment of depression, which again is similar to the results of other studies.^{18,19,29} Disconcertingly, most physicians rated their training on depression as inadequate and felt that they received less training on depression in comparison to other diseases. Quality improvement efforts should focus on providing continuing education about depression, to improve physician knowledge of psychological counseling and proper use of antidepressants to better equip them to treat depression. Future research needs to investigate the cause-effect relationships of different types and amounts of training with observable changes in physician behavior and measurable changes in patient outcomes.

There were certain strengths and limitations in our study. This is believed to be the first study in Taiwan with a large sample size that explores in detail how physicians approach the identification and management of depression, the perceived confidence and barriers to their involvement, and knowledge of depression. Physicians in our study were mostly community-based practitioners and widespread geographically. There were some methodological limitations to the study. Firstly, it was conducted in selected geographical areas, and findings may not be generalizable beyond these areas. Secondly, the sample recruited physicians who attended a depression training course and contained a greater proportion of male physicians than the national workforce. One potential bias to consider is whether physicians who are interested in depression might have been more likely to attend the educational program, and thus have a favorable attitude towards psychosocial issues, which may also reduce the generalizability of the results. Thirdly, the evaluation was made by self-reports of physician behavior, not on observations of actual behavior or on review of patient records. It is impossible to tell whether a similar clinical performance would occur with real patients. Furthermore, we cannot be sure of the extent to which responses were driven by social

desirability and therefore, attitudes and practice patterns may have been reported in a more positive way. Finally, because of the relatively weak correlation, the inference from the results should be conservative.

Despite these limitations, our study raises important issues. Non-psychiatric physicians play a key role in the care of depression, but identifying and managing depression can be a challenge. Attitudinal barriers, confidence, knowledge of treatment may compromise a physician's ability to manage depression. In the light of increasing pressure on non-psychiatrists to manage depression, these findings should encourage training programs for non-psychiatric physicians to include psychosocial training and to disseminate recommended treatment guidelines for depression, to increase the effectiveness of managing depression. FPs, internists and others who care for patients with depression need to strive to provide good mental health care for their patients in spite of the barriers.

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