

# Characteristics Associated With Purchasing Antidepressant or Antianxiety Medications Through Primary Care in Israel

Liat Ayalon, Ph.D.  
Revital Gross, Ph.D.  
Aviv Yaari, M.D.  
Elan Feldhamer, B.A.  
Ran Balicer, M.D., Ph.D.  
Margalit Goldfracht, M.D.

**Objectives:** This study analyzed the role of patient and physician characteristics associated with the purchase of antidepressant or antianxiety medications in Israel, a country that has a universal health care system. **Methods:** A national sample of 30,000 primary care patients over the age of 22 was randomly drawn from the registry of the largest health care fund in Israel. Data concerning medication purchase between January and December 2006 were extracted. Physician and patient characteristics were merged with Israel's unique identification number. Multilevel analysis was conducted to identify patient- and physician-level predictors of medication purchase. **Results:** Overall, 19% (N=4,762) of the sample purchased antidepressant or antianxiety medications. Individuals with greater general medical and psychiatric comorbidity were more likely to purchase antidepressant or antianxiety medications. Older adults, women, those of higher socioeconomic status, and immigrants (with the exception of Jews born in Asia or Africa) were also more likely to purchase medications. Arabs and Jews born in Asia and Africa were less likely to purchase medications even after all other variables were accounted for. Physician characteristics were minimally associated with the purchase of medications. **Conclusions:** The findings demonstrate that despite universal health care access, there were variations by population groups. Educational efforts should target patients as well as physicians. (*Psychiatric Services* 62:1041–1046, 2011)

It is imperative to evaluate the management of common mood and anxiety disorders in primary care (1,2). The prevalence of these disorders is high at this level of care

(3–5), and we must consider the high financial, physical, and emotional toll associated with these conditions, especially if left untreated (6), and recent advances associated with their

treatment in the primary care setting. Several studies have focused on the management of mood and anxiety disorders in primary care. Most of these studies have focused primarily on patient characteristics and neglected to take into consideration physician characteristics. These studies have shown that in addition to psychiatric diagnosis (7), older adults, women (8,9), individuals with greater medical morbidity (10), individuals of higher socioeconomic status (11), and individuals of the majority group are more likely to use psychotropic medications or receive guideline-concordant treatment (12). Lack of culturally appropriate services (13), physical and financial barriers (14), the stigma associated with mental illness (15), and treatment preferences for counseling rather than medication (16) may be partially responsible for these variations.

Other studies have focused primarily on physician characteristics associated with the management of mood and anxiety conditions in primary care (17,18). For instance, a study conducted in Israel found that family medicine physicians were more likely to manage depression by themselves compared with internal medicine physicians (19). Only a few studies examined both physician and patient characteristics, but most of these studies did not conduct multilevel analysis to distinguish patient- and physician-level characteristics. One

---

*Prof. Ayalon is affiliated with the Louis and Gabi Weisfeld School of Social Work, Bar Ilan University, Ramat-Gan 52900, Israel (liatayalon0@gmail.com), where the late Prof. Gross was affiliated. Prof. Gross was also with the Department of Management, Bar Ilan University. Dr. Yaari and Mr. Feldhamer are with the Clalit Health Services and Clalit Research Institute, Tel Aviv, Israel. Dr. Balicer is with the Chief Physician Office, Clalit Health Services, and with the Epidemiology Department at the Faculty of Health Sciences, Ben Gurion University of the Negev, Beer-Sheva, Israel. Dr. Goldfracht is with the Community Division, Clalit Health Services, Tel Aviv, and with Department of Family Health Care, Bruce Rappaport Faculty of Medicine, Technion, Haifa, Israel.*

study found lower levels of adherence to psychotropic medications especially among patients of high-prescribing physicians (11). Other studies found that patients whose physicians used guideline-concordant follow-up (20) or provided greater educational information concerning the medications (21) were more likely to adhere to their medication regimen.

There is a growing body of research arguing that multilevel analysis that takes into consideration both physician and patient characteristics is required for adequate understanding of clinical management in primary care (22). Therefore, the objective of this study was to analyze the role of patient and physician characteristics associated with the purchase of antidepressant and antianxiety medications in Israel, a country that has a universal health care system and provides a comprehensive uniform basket of services that includes psychotropic medications but not psychotherapy (23).

With this study, we had an opportunity to use a comprehensive computerized medical registry of Clalit Health Services to evaluate patient and primary care physician characteristics associated with the purchase of antidepressant and antianxiety medications. Clalit Health Services is the largest health care fund in Israel, insuring 53% of the Israeli population. The database includes information on actual purchasing behaviors of patients instead of self-report data, which have known limitations, in particular regarding sensitive issues (24).

On the basis of past research (25–28), we expected older adults, women, and Israeli Jews to have a higher probability of purchasing antidepressant and antianxiety medications compared with Israeli Arabs. In addition, on the basis of a previous study regarding primary care physicians in Israel (19), we expected a higher probability of purchasing among patients served by physicians with a specialty in family medicine.

## Methods

The study received institutional review board approval from the Helsinki Committee of Clalit Health Services. We randomly sampled 30,000 primary care patients over the age of

22 as of January 2006 from Clalit Health Services' computerized medical registry.

## Measures

Clalit Health Services uses a computerized medical registry that contains both patient and physician data. All physicians' visits are recorded in this registry and are matched with pharmacy data according to unique patient and physician IDs assigned to all Israelis.

We extracted data regarding whether or not an antidepressant (selective serotonin reuptake inhibitor, nonselective monoamine reuptake inhibitor, and serotonin-norepinephrine reuptake inhibitors) or antianxiety medication (benzodiazepine and other hypnotics) was purchased at least once between January and December 2006.

## Patient-level predictors

*Demographic information.* From patients' self-report on initial visit, age, gender, birth country, and number of years in Israel were recorded in the registry.

*Charlson Comorbidity Index.* The Charlson Comorbidity Index reflects both the number and seriousness of the patient's medical conditions in order to predict mortality (29). This score is calculated by Clalit Health Services' medical division for all primary care patients and is adjusted for age.

*Somatic diagnosis.* We constructed a list of common nonpsychiatric somatic conditions for which antidepressant or antianxiety medications are indicated on the basis of the medical literature (30–34). These conditions are specified in Clalit Health Services' computerized system as osteoarthritis of the spine, arthralgia, back symptoms, lower back pain, lower back pain with radiation, back disorders unspecified, backache, psychogenic backache, backache with radiation symptoms, chronic arthritis, headache, headache not otherwise specified, tension headache, abdominal pain, low abdominal pain, insomnia not otherwise specified, insomnia of nonorganic origin, psychogenic sleep disorder, sleep disorder, malaise, malaise and fatigue, fatigue,

and giddiness and dizziness. The presence of any of these diagnoses was classified as somatic diagnosis.

*Psychiatric diagnosis.* Mood disorders, anxiety disorders, adjustment disorders, and somatoform disorders were included under this category, using *ICD-10* codes. We excluded posttraumatic stress disorder, obsessive-compulsive disorder, bipolar disorder, and body dysmorphic disorder because our aim was to focus on psychiatric conditions that are within the mandate of Clalit Health Services' primary care physicians (35) rather than psychiatrists.

*Socioeconomic status.* Socioeconomic status (low, medium, high) was based on the Israeli Central Bureau of Statistics classification (36). Although these data are available at the primary care clinic level, it is considered a good proxy of patient socioeconomic status (37,38). The vast majority of patients are registered in neighborhood clinics; thus the socioeconomic status of clinics reflects that of the patients' place of residence.

*Population group.* Individuals were classified as Arabs or Jews on the basis of Clalit Health Services' classification of primary care clinics into locations that serve at least 70% Israeli Jews versus Israeli Arabs. Although these data are available at the primary care clinic level, they are considered a good proxy of patient ethnicity, given Israel's highly segregated nature (39).

## Physician-level predictors

Physicians' age, gender, place of birth, number of years in the country, number of years of experience, and specialty (none, family, or other) were available from employee records.

## Analysis

We first conducted univariate and bivariate analyses. Next, we conducted multilevel analysis, with patient-level data representing the first level of predictors (patient age, gender, socioeconomic status) and physician-level data (physician age, gender, number of years in the country) representing the second level. The outcome variable was whether or not a patient purchased antidepressant or antianxiety medications at least once in 2006.

In the first step of the multilevel analysis, we used an empty model with physician as a random effect. This model estimated the outcome per physician rather than per patient. The intraclass correlation (ICC) scores that resulted could range from 0% to 100%, and they reflected the degree to which patients of the same physician were more similar to one another than patients of other physicians. Thus the ICC indicated the proportion of the total variance that was due to differences between physicians. If the ICC was relatively large, a multilevel analysis was justified. However, a relatively low ICC did not justify a multilevel analysis, and analysis instead considered only patient-level variables (level 1). As a rule of thumb, ICCs of .05, .10, and .15 represent small, medium, and large effect sizes, respectively (40).

After calculating the ICC (which was .05), we conducted a logistic regression with purchase of antidepressant or antianxiety medications as an outcome. Only significant patient-level predictors ( $p < .05$ ) identified in bivariate analyses were entered into the model.

## Results

Of the 30,000 randomly selected patients, 591 died in 2006 and 4,446 individuals had incomplete physician data; these categories were not mutually exclusive. Thus the final sample consisted of 25,092 primary care patients, listed with 1,418 physicians working in 850 clinics all over the country. There were significant differences between those excluded from analysis because of death or missing physician data and the final sample. Those excluded from analysis were more likely to purchase antidepressant or antianxiety medications compared with the final sample ( $N=1,016$ , 20%;  $N=4,762$ , 19%, respectively;  $p=.003$ ). In addition, those excluded from analysis were more likely to be older than 66 ( $N=1,271$ , 26%;  $N=4,806$ , 19%, respectively) and less likely to be between 46 and 65 ( $N=1,428$ , 29%;  $N=8,801$ , 35%, respectively;  $p<.001$ ), had a higher mean  $\pm$ SD Charlson score ( $2.1 \pm 2.8$  versus  $1.7 \pm 2.1$ , respectively), and were less likely to have a somatic di-

agnosis (common nonpsychiatric somatic conditions for which antidepressant or antianxiety medications are indicated) ( $N=1,397$ , 28%;  $N=8,474$ , 34%, respectively;  $p<.001$ ) compared with the final sample. Those excluded were also more likely to be of high socioeconomic status ( $N=1,151$ , 24%;  $N=4,514$ , 18%, respectively) and less likely to be of low socioeconomic status ( $N=1,762$ , 36%;  $N=10,494$ , 42%, respectively;  $p<.001$ ) compared with the final sample. Finally, those excluded were less likely than the final sample to be Jews

born in Israel ( $N=1,913$ , 39%;  $N=11,093$ , 45%, respectively) and more likely to be Arabs ( $N=851$ , 17%;  $N=3,639$ , 14%, respectively;  $p<.01$ ), compared with the final sample (Table 1).

Overall, 4,762 (19%) of the sample purchased antidepressant or antianxiety medications in 2006. There were significant differences between those who purchased medications and those who did not for all patient-level variables, with the exception of years in Israel. Women, older patients, those with a psychiatric or somatic di-

**Table 1**

Patient and physician characteristics by whether or not antidepressant or antianxiety medications were purchased

| Characteristic                                          | Total<br>(N=25,092) |    | Did not<br>purchase<br>(N=20,330) |    | Purchased<br>(N=4,762) |    | p     |
|---------------------------------------------------------|---------------------|----|-----------------------------------|----|------------------------|----|-------|
|                                                         | N                   | %  | N                                 | %  | N                      | %  |       |
| Patient-level data (N=25,092)                           |                     |    |                                   |    |                        |    |       |
| Female                                                  | 13,308              | 53 | 10,254                            | 50 | 3,054                  | 64 | <.001 |
| Age                                                     |                     |    |                                   |    |                        |    | <.001 |
| 22–45                                                   | 11,482              | 46 | 10,583                            | 52 | 899                    | 19 |       |
| 46–65                                                   | 8,801               | 35 | 6,995                             | 34 | 1,806                  | 38 |       |
| ≥66                                                     | 4,806               | 19 | 2,749                             | 13 | 2,057                  | 43 |       |
| Population group                                        |                     |    |                                   |    |                        |    | <.001 |
| Jews born in Israel                                     | 11,093              | 45 | 9,687                             | 48 | 1,406                  | 30 |       |
| Arabs                                                   | 3,639               | 14 | 3,347                             | 17 | 292                    | 6  |       |
| Jews born in Europe, U.S.,<br>or Canada                 | 944                 | 4  | 637                               | 3  | 307                    | 7  |       |
| Jews born in Eastern Europe<br>or former Soviet Union   | 4,720               | 19 | 3,194                             | 16 | 1,526                  | 33 |       |
| Jews born in Asia or Africa                             | 4,444               | 18 | 3,293                             | 16 | 1,151                  | 25 |       |
| ≤10 years in Israel                                     | 1,096               | 4  | 890                               | 4  | 206                    | 4  | .44   |
| Charlson Comorbidity Index<br>(M±SD score) <sup>a</sup> | 1.7±2.1             |    | 1.3±1.8                           |    | 3.2±2.6                |    | <.001 |
| Somatic diagnosis                                       | 8,474               | 34 | 6,049                             | 30 | 2,425                  | 51 | <.001 |
| Psychiatric diagnosis                                   | 865                 | 3  | 187                               | 1  | 678                    | 14 | <.001 |
| Socioeconomic status                                    |                     |    |                                   |    |                        |    | <.001 |
| Low                                                     | 10,494              | 42 | 8,702                             | 43 | 1,792                  | 38 |       |
| Medium                                                  | 9,812               | 39 | 7,801                             | 39 | 2,011                  | 43 |       |
| High                                                    | 4,514               | 18 | 3,590                             | 18 | 924                    | 20 |       |
| Physician-level data (N=1,418)                          |                     |    |                                   |    |                        |    |       |
| Female                                                  | 734                 | 52 |                                   |    |                        |    |       |
| Age (M±SD)                                              | 49.4±7.2            |    |                                   |    |                        |    |       |
| Birth country                                           |                     |    |                                   |    |                        |    |       |
| Israel                                                  | 540                 | 38 |                                   |    |                        |    |       |
| Europe, U.S., or Canada                                 | 136                 | 10 |                                   |    |                        |    |       |
| Eastern Europe or the former<br>Soviet Union            | 691                 | 49 |                                   |    |                        |    |       |
| Asia or Africa                                          | 38                  | 3  |                                   |    |                        |    |       |
| Years in Israel (M±SD)                                  | 32.5±15.7           |    |                                   |    |                        |    |       |
| Years of experience (M±SD)                              | 15.9±7.9            |    |                                   |    |                        |    |       |
| Specialty                                               |                     |    |                                   |    |                        |    |       |
| None                                                    | 605                 | 43 |                                   |    |                        |    |       |
| Family                                                  | 723                 | 51 |                                   |    |                        |    |       |
| Other                                                   | 90                  | 6  |                                   |    |                        |    |       |

<sup>a</sup> Possible scores range from 0 to 37, with higher scores indicating greater morbidity.

agnosis, those with greater medical comorbidity, and those of higher socioeconomic status were more likely to purchase antidepressant or antianxiety medications. Israeli Arabs were less likely to purchase medications, and Israeli Jews born abroad (immigrants) were more likely to purchase medications compared with Jews born in Israel (Table 1).

Table 2 presents results of the logistic analysis, showing that women, older adults, those with greater medical comorbidity, and those with a psychiatric or somatic diagnosis were more likely than others to purchase medications. Jews born outside the country (with the exception of those born in Asia or Africa) were more likely than Jews born in Israel to purchase medications. In contrast, Arabs and Jews born in Asia or Africa were less likely than Jews born in Israel to purchase medications. Finally, those of higher socioeconomic status were more likely to purchase medications.

## Discussion

This study evaluated the purchase of antidepressant or antianxiety medications in Israel by using medical registry data of the largest health care fund in Israel. The most notable finding was the high rate of antidepressant or antianxiety medications purchased (4,762; 19%) relative to the low rate of documented relevant psychiatric diagnoses, which amounted

to 865 patients (3%) in the entire sample and 678 (14%) of those purchasing psychotropic medications. This overall rate of 3% likely is an underestimate given epidemiological studies that have shown much higher prevalence rates of psychiatric conditions in primary care (28). Thus, similar to past research (4), this study clearly demonstrated a tendency to underrecord mental disorders in primary care. This may be due to patient-related or physician-related causes such as the stigma associated with psychiatric illness (41–44). Although the reported rates of purchase seem to coincide well with general estimates of the prevalence of depression and anxiety in primary care (3–5), the use of antidepressant and antianxiety medications is also indicated for nonpsychiatric conditions. Thus undertreatment may prevail in this population.

As expected, having a psychiatric diagnosis was the best predictor of antidepressant or antianxiety medications. Nevertheless, the presence of somatic diagnosis based on nonpsychiatric symptoms, such as pain or insomnia, was also a strong predictor of purchase. In fact, although only 14% of those purchasing antidepressant or antianxiety medications had a relevant psychiatric diagnosis, 51% of purchasers had a nonpsychiatric somatic diagnosis. Therefore, it is possible that some mental conditions were

labeled as somatic either erroneously or due to the stigma of mental illness. Further research is needed to clearly verify the source of this finding and to better tailor educational interventions to improve the diagnosis of mental illness and potentially improve the treatment quality of depression and anxiety in primary care.

Rates of medication purchase identified in this study were substantially higher than prevalence rates obtained by self-report measures in a previous national study (27,45). The stigma associated with the use of psychotropic medications might be responsible for a lower rate found in past research that was based on self-report data. This should be taken into consideration in future epidemiological studies concerning psychotropic use.

Another interesting finding is population group differences in the purchase of psychotropic medications. Israel has a universal health care system that covers psychotropic use. Yet, those of higher socioeconomic status were more likely to purchase medications, potentially because socioeconomic status is a proxy of education and reduced stigma of mental illness. In addition, consistent with past research (45), the purchase of medications does seem to be higher among immigrants (with the exception of those born in Africa or Asia) and lower among Israeli Arabs and immigrants from Asia and Africa (25,26). Research has consistently shown that migration is a stressful situation that often has deleterious effects on one's mental health (46,47). This study may provide further support to these findings because it demonstrates that immigrants, with the exception of those coming from Asia or Africa, are more likely to purchase antidepressant or antianxiety medications. Alternatively, this may reflect a cultural preference toward psychotropic use in these particular groups.

Israeli Arabs were substantially less likely than Jews born in Israel to purchase medications, with multivariate analyses controlling for all other demographic and clinical variables. These findings are particularly intriguing given past research that found substantially higher levels of depression among Israeli Arabs than

**Table 2**

Logistic regression analysis of patient-level predictors of purchase of antidepressant or antianxiety medications<sup>a</sup>

| Patient characteristic                             | OR    | 95% CI      | p     |
|----------------------------------------------------|-------|-------------|-------|
| Female (reference: male)                           | 1.53  | 1.42–1.65   | <.001 |
| Age (reference: 22–45)                             |       |             | <.001 |
| 46–65                                              | 1.93  | 1.74–2.14   |       |
| ≥66                                                | 2.64  | 2.27–3.06   |       |
| Population group (reference: Jews born in Israel)  |       |             |       |
| Arabs                                              | .52   | .45–.61     | <.001 |
| Jews born in Europe or America                     | 1.59  | 1.44–1.76   | <.001 |
| Jews born in Eastern Europe or former Soviet Union | 1.65  | 1.39–1.95   | <.001 |
| Jews born in Asia or Africa                        | .89   | .80–.99     | .040  |
| Charlson Comorbidity Index score                   | 1.24  | 1.21–1.27   | <.001 |
| Somatic diagnosis (reference: none)                | 1.82  | 1.68–1.95   | <.001 |
| Psychiatric diagnosis (reference: none)            | 17.19 | 14.29–20.68 | <.001 |
| Socioeconomic status (reference: low)              |       |             |       |
| Medium                                             | 1.04  | .96–1.13    | .29   |
| High                                               | 1.13  | 1.02–1.26   | .020  |

<sup>a</sup>  $\chi^2=4,995.94$ ,  $df=12$ ,  $p<.001$

among Israeli Jews (48). Low levels of psychotropic purchase may be explained by culturally incompatible services offered to this population (49). This may also be due to the stigma of mental illness in this population (50,51). Further efforts to improve culturally sensitive services and to reduce the stigma associated with mental illness are indicated particularly for Israeli Arabs. It is possible that Israeli Jews born in Asia or the Middle East may also benefit from such interventions. Nevertheless, we cannot rule out the possibility that those groups in the population who were less inclined to purchase antidepressant or antianxiety medications used other modalities to manage mental distress. However, because psychotherapy is not included in the basket of services provided by universal health care funds in Israel and because community services that offer psychotherapeutic interventions are overburdened by demand (52), it is unclear whether disadvantaged groups have access to other formal modalities to address their mental health needs. Finally, it is possible that the use of informal services, such as religious counseling or assistance by family and friends, successfully replaces formal services in these groups.

An interesting lack of significant finding should also be noted. In contrast to past research adamantly advocating multilevel analysis of primary care data (22), we found physician-level variations to be too low to justify such an analysis. This is also in contrast to past research that found physician characteristics to be of importance in the treatment of mental illness (17,18). Possibly, the focus on purchase rather than prescription is partly responsible for this difference, because the purchase of medications likely is more dependent on patient characteristics than on physician characteristics. Although less common in Israel, the fact that many psychotropic medications are directly advertised to patients and not only to physicians may account for the findings (53). Another explanation may be related to the implementation of guidelines and massive educational

efforts of Clalit Health Services in the past few years to increase primary care physicians' awareness of and ability to treat depression and anxiety (35). These efforts may have possibly reduced differences among physicians of varying specialties and experience levels.

Several limitations should be noted. Our study focused on the purchase of antidepressant or antianxiety medications in primary care and not on the treatment of depression or anxiety, which would include other important approaches, such as psychotherapy, appropriate follow-up and planning, and case management (54). Because under current laws psychotherapy is not included in the basket of services provided by universal health care funds to primary care patients in Israel, data on these treatments are not recorded in Clalit Health Services' medical records, and thus we were unable to conduct a comprehensive evaluation of the treatment of depression or anxiety in primary care. In addition, this study focused on the purchase of medications rather than on the prescription of medications. The focus on cross-sectional analysis does not allow for inferences about cause and effect. Furthermore, the individuals excluded from analysis were substantially different from the remaining sample, suggesting that some groups may be underrepresented. Finally, we did not have data on physicians' ethnic origin, a variable that might be related to patients' purchasing behaviors.

## Conclusions

The findings demonstrate that despite universal health care access to all, variations exist by population groups. Further research is needed to ascertain reasons for underpurchase among the different groups (Arabs, Jews born in Asia or Africa, men, younger adults, people of lower socioeconomic status). Specifically, despite the high rates of mental distress reported by the Arab population in past research (25,26), the low usage of medications suggests that services should be specifically tailored to address the needs of this population. Finally, given the relatively minor association found between primary care

physician characteristics and medication purchase, educational efforts regarding mental illness and the use of psychotropic medications should target both patients and physicians.

## Acknowledgments and disclosures

This study was funded by a research grant from Clalit Health Care. This work is dedicated to the memory of Prof. Revital Gross, who has been the authors' inspiration.

The authors report no competing interests.

## References

1. Arroll B, Macgillivray S, Ogston S, et al: Efficacy and tolerability of tricyclic antidepressants and SSRIs compared with placebo for treatment of depression in primary care: a meta-analysis. *Annals of Family Medicine* 3:449-456, 2005
2. Davidson JR, Feltner DE, Dugar A: Management of generalized anxiety disorder in primary care: identifying the challenges and unmet needs. *Primary Care Companion of the Journal of Clinical Psychiatry* 12(2), 2010
3. Kroenke K, Spitzer RL, Williams JBW, et al: Anxiety disorders in primary care: prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine* 146:317-325, 2007
4. Ornstein S, Stuart G, Jenkins R: Depression diagnoses and antidepressant use in primary care practices: a study from the Practice Partner Research Network (PPR-Net). *Journal of Family Practice* 49:68-72, 2000
5. Wittchen HU, Kessler RC, Beesdo K, et al: Generalized anxiety and depression in primary care: prevalence, recognition, and management. *Journal of Clinical Psychiatry* 63(suppl 8):24-34, 2002
6. Simon G, Ormel J, VonKorff M, et al: Health care costs associated with depressive and anxiety disorders in primary care. *American Journal of Psychiatry* 152:352-357, 1995
7. Joukamaa M, Sohlman B, Lehtinen V: The prescription of psychotropic drugs in primary health care. *Acta Psychiatrica Scandinavica* 92:359-364, 1995
8. Swartz M, Landerman R, George LK, et al: Benzodiazepine anti-anxiety agents: prevalence and correlates of use in a southern community. *American Journal of Public Health* 81:592-596, 1991
9. Linden M, Lecrubier Y, Bellantuono C, et al: The prescribing of psychotropic drugs by primary care physicians: an international collaborative study. *Journal of Clinical Psychopharmacology* 19:132-140, 1999
10. Shelton RC, Hollon SD, Wisniewski SR, et al: Factors associated with concomitant psychotropic drug use in the treatment of major depression: a STAR\*D Report. *CNS Spectrums* 14:487-498, 2009
11. Hansen DG, Vach W, Rosholm J-U, et al: Early discontinuation of antidepressants in

- general practice: association with patient and prescriber characteristics. *Family Practice* 21:623–629, 2004
12. Fassaert T, Nielen M, Verheij R, et al: Quality of care for anxiety and depression in different ethnic groups by family practitioners in urban areas in the Netherlands. *General Hospital Psychiatry* 32:368–376, 2010
13. Atdjian S, Vega WA: Disparities in mental health treatment in US racial and ethnic minority groups: implications for psychiatrists. *Psychiatric Services* 56:1600–1602, 2005
14. Woodward AM, Dwinell AD, Arons BS: Barriers to mental health care for Hispanic Americans: a literature review and discussion. *Journal of Mental Health Administration* 19:224–236, 1992
15. Ayalon L, Arian PA, Alvidrez J: Adherence to antidepressant medications in black and Latino elderly patients. *American Journal of Geriatric Psychiatry* 13:572–580, 2005
16. Dwight-Johnson M, Sherbourne CD, Liao D, et al: Treatment preferences among depressed primary care patients. *Journal of General Internal Medicine* 15:527–534, 2000
17. Matthews K, Eagles JM, Matthews CA: The use of antidepressant drugs in general practice: a questionnaire survey. *European Journal of Clinical Pharmacology* 45:205–210, 1993
18. Mojtabai R: Diagnosing depression and prescribing antidepressants by primary care physicians: the impact of practice style variations. *Mental Health Services Research* 4:109–118, 2002
19. Rabinowitz J, Feldman D, Gross R, et al: Which primary care physicians treat depression? *Psychiatric Services* 49:100–102, 1998
20. Chen SY, Hansen RA, Gaynes BN, et al: Guideline-concordant antidepressant use among patients with major depressive disorder. *General Hospital Psychiatry* 32:360–367, 2010
21. Lin EH, Von Korff M, Katon W, et al: The role of the primary care physician in patients' adherence to antidepressant therapy. *Medical Care* 33:67–74, 1995
22. Zyzanski SJ, Flocke SA, Dickinson LM: On the nature and analysis of clustered data. *Annals of Family Medicine* 2:199–200, 2004
23. Shirom A, Gross R: World health systems: Israel; in *World Health Systems: Challenges and Perspectives*. Edited by Fried BJ, Gaydos LM. Ann Arbor, Mich, Health Administration Press, 2002
24. Sallis JF, Saelens BE: Assessment of physical activity by self-report: status, limitations, and future directions. *Research Quarterly for Exercise and Sports* 71:S1–S14, 2000
25. Gross R, Baum N, Oved-Or M: Factors associated with seeking formal and informal help for mental distress in the general population in Israel. *Social Security* 79:111–140, 2009
26. Gross R, Brammli-Greenberg S, Rosen B, et al: Mental distress and patterns of getting help prior to the transfer of responsibility for mental health to the health plans: a service consumers' perspective. Research report RR-538-08. Jerusalem, Myers-JDC-Brookdale Institute, 2009
27. Levinson D, Lerner Y, Zilber N, et al: Twelve-month service utilization rates for mental health reasons: data from the Israel National Health Survey. *Israel Journal of Psychiatry and Related Sciences* 44:114–125, 2007
28. Levinson D, Zilber N, Lerner Y, et al: Prevalence of mood and anxiety disorders in the community: results from the Israel National Health Survey. *Israel Journal of Psychiatry and Related Sciences* 44:94–103, 2007
29. Charlson ME, Pompei P, Ales KL, et al: A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. *Journal of Chronic Diseases* 40:373–383, 1987
30. Clauw DJ: Pharmacotherapy for patients with fibromyalgia. *Journal of Clinical Psychiatry* 69(suppl 2):25–29, 2008
31. Pary R, Tobias CR, Webb WK, et al: Treatment of insomnia: getting to the root of sleeping problems. *Postgraduate Medicine* 100:195–210, 1996
32. Finocchi C, Villani V, Casucci G: Therapeutic strategies in migraine patients with mood and anxiety disorders: clinical evidence. *Neurological Sciences* 31(suppl 1):S95–S98, 2010
33. Teasell RW, Mehta S, Aubut JA, et al: A systematic review of pharmacologic treatments of pain after spinal cord injury. *Archives of Physical Medicine and Rehabilitation* 91:816–831, 2010
34. Lindsay TJ, Rodgers BC, Savath V, et al: Treating diabetic peripheral neuropathic pain. *American Family Physician* 82:151–158, 2010
35. Goldfracht M, Liebermann N, Gross R: Treating mental distress by primary care staff. *Health Policy Monitor*, Oct 2006. Available at [www.hpm.org/survey/is/a8/3](http://www.hpm.org/survey/is/a8/3)
36. Classification of Municipalities by the Socio-Economic Characteristics of the Population. Jerusalem, Central Bureau of Statistics, 2003
37. Gross R, Brammli-Greenberg S, Gordon B, et al: Disparities in obesity temporal trends of Israeli adolescents by ethnic origin. *International Journal of Pediatric Obesity* 6:e154–e161, Oct 14, 2010. Available at DOI 10.3109/17477166.2010.500389
38. Gross R, Brammli-Greenberg S, Gordon B, et al: Population-based trends in male adolescent obesity in Israel 1967–2003. *Journal of Adolescent Health* 44:195–198, 2009
39. Falah G: Living together apart: residential segregation in mixed Arab-Jewish cities in Israel. *Urban Studies* 33:823–857, 1996
40. Hox J: *Multilevel Analysis: Techniques and Application*. Mahwah, NJ, Erlbaum, 2002
41. Byrne P: Stigma of mental illness and ways of diminishing it. *Advances in Psychiatric Treatment* 6:65–72, 2000
42. Sanci L, Lewis D, Patton G: Detecting emotional disorder in young people in primary care. *Current Opinion in Psychiatry* 23:318–323, 2010
43. Callahan EJ, Jaen CR, Crabtree BF, et al: The impact of recent emotional distress and diagnosis of depression or anxiety on the physician-patient encounter in family practice. *Journal of Family Practice* 46:410–418, 1998
44. Susman JL, Crabtree BF, Essink G: Depression in rural family practice: easy to recognize, difficult to diagnose. *Archives of Family Medicine* 4:427–431, 1995
45. Grinshpoon A, Marom E, Weizman A, et al: Psychotropic drug use in Israel: results from the National Health Survey. *Primary Care Companion of the Journal of Clinical Psychiatry* 9:356–363, 2007
46. Mirsky J: Mental health implications of migration: a review of mental health community studies on Russian-speaking immigrants in Israel. *Social Psychiatry and Psychiatric Epidemiology* 44:179–187, 2009
47. Mirsky J, Kohn R, Levav I, et al: Psychological distress and common mental disorders among immigrants: results from the Israeli-based component of the world mental health survey. *Journal of Clinical Psychiatry* 69:1715–1720, 2008
48. Kaplan G, Glasser S, Murad H, et al: Depression among Arabs and Jews in Israel: a population-based study. *Social Psychiatry and Psychiatric Epidemiology* 45:931–939, 2010
49. Al-Krenawi A: Socio-political aspects of mental health practice with Arabs in the Israeli context. *Israel Journal of Psychiatry and Related Sciences* 42:126–136, 2005
50. Haj-Yahia MM: Attitudes towards mentally ill people and willingness to employ them in Arab society. *International Sociology* 14:173–193, 1999
51. Al-Krenawi A, Graham JR: Culturally sensitive social work practice with Arab clients in mental health settings. *Health and Social Work* 25:9–22, 2000
52. Feldman D: Mental health clinics in Israel: directions and changes over the past decade; in *Mental Health Services in Israel: Directions and Challenges*. Edited by Aviram A, Ginat Y. Azur, Israel, Cherikuber, 2006
53. Kravitz RL, Epstein RM, Feldman MD, et al: Influence of patients' requests for direct-to-consumer advertised antidepressants: a randomized controlled trial. *JAMA* 293:1995–2002, 2005