Physician and Nurse Use of Psychosocial Strategies in Diabetes Care

Results of the cross-national Diabetes Attitudes, Wishes and Needs (DAWN) study

MARK PEYROT, PHD[1,2]
RICHARD R. RUBIN, PHD[2,3]
LINDA M. SIMINERIO, PHD[4]
ON BEHALF OF THE INTERNATIONAL DAWN ADVISORY PANEL*

OBJECTIVE — To determine the use of psychosocial strategies by health care providers in treating patients with diabetes and the factors associated with use of these strategies.

RESEARCH DESIGN AND METHODS — Cross-sectional survey of national samples of generalist and diabetes specialist physicians (n = 2,705) and nurses (n = 1,122) from the multinational study of Diabetes Attitudes, Wishes and Needs. Respondents were from 13 countries in Asia, Australia, Europe, and North America. Two psychosocial strategies were examined: provider psychosocial care, which provides psychosocial support by diabetes care providers to their own patients, and psychosocial specialist care, which refers diabetic patients to psychosocial specialists.

RESULTS — Compared with physicians, nurses perceived significantly higher prevalence and severity of psychosocial problems and used psychosocial strategies significantly more frequently, even though they rated their own psychosocial skills lower. Among both physicians and nurses, diabetes specialists were significantly more likely than generalists to utilize psychosocial strategies. Physicians and nurses used psychosocial strategies significantly more when they believed that more patients have psychosocial problems and that problems interfere more with diabetes control. Referral to psychosocial specialists was significantly more likely when physicians and nurses perceived that professional psychological resources were more available. There were substantial country differences in all factors studied. Compared with other countries, U.S. providers provided more psychosocial care themselves but were less likely to refer to psychosocial specialists.

CONCLUSIONS — Psychosocial strategies are important parts of the diabetes care provider repertoire; understanding their determinants may facilitate efforts to increase their use.

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Psychosocial factors can play an important role in diabetes care. For example, patients often feel high levels of diabetes-related emotional distress, resulting in diabetes care "burnout" (1). Depression is approximately twice as high among people with diabetes compared with those without chronic disease, and >40% of patients have been identified as depressed in some studies (2,3). Depression can interfere with self-care and glycemic control and is associated with increased morbidity, morality, and functional limitations as well as health care costs (4–9).

Patients who experience emotional distress often want more emotional support than they receive (10). Despite high levels of distress, relatively small numbers of patients receive psychological treatment (11). Primary care providers do not identify all those in need of psychological treatment, and those identified do not necessarily receive appropriate treatment (12). This is unfortunate because research indicates that psychological treatment in primary care can be effective (13,14). Moreover, treatment by psychosocial specialists can be effective for patients who are referred for care (15). For example, recent meta-analyses indicate that mental health treatment is associated with reductions in depression and HbA_{1c} levels (16,17). Medications represent another effective method of treatment (18,19).

Health care provider strategies for dealing with the psychosocial needs of patients with diabetes are not well understood. The research cited here indicates that psychosocial factors are important influences on diabetes outcomes, and subjective quality of life is a worthwhile outcome in its own right. Therefore, it is important to understand how health care providers deal with their patients' psychosocial needs.

The goal of this article is to examine two psychosocial care strategies that physicians and nurses use in their management of diabetic patients: provider psychosocial care, which is psychosocial support by diabetes care providers to their own patients, and psychosocial specialist care, which is the referral of diabetic patients to psychosocial specialists.

We hypothesize that psychosocial care strategies are associated with several types of factors, including the nature of health care systems (represented by different countries), the nature of the provider and his/her practice environment, and provider perceptions of psychosocial problems and resources. Specifically, we

From the [1]Department of Sociology, Loyola College, Baltimore, Maryland; the [2]Department of Medicine, Johns Hopkins University School of Medicine, Baltimore, Maryland; the [3]Department of Pediatrics, Johns Hopkins University School of Medicine, Baltimore, Maryland; and the [4]University of Pittsburgh Diabetes Institute, University of Pittsburgh Medical Center, Pittsburgh, Pennsylvania.

Address correspondence and reprint requests to Mark Peyrot, Loyola College, 4501 North Charles St., Baltimore, MD 21210-2699. E-mail: mpeyrot@loyola.edu.

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*A complete list of International DAWN Advisory Panel members can be found in the APPENDIX.

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Abbreviations: DAWN, Diabetes Attitudes, Wishes and Needs.

A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

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hypothesize that psychosocial care strategies are used more by diabetes specialists and by diabetes care providers who perceive psychosocial problems to be more common and severe and who have greater availability of psychosocial resources.

RESEARCH DESIGN AND METHODS

— This study examines data from the multinational Diabetes Attitudes, Wishes and Needs (DAWN) study (20). This article provides an overview of the study design; more detailed descriptions can be found in earlier publications (11,21,22). The objectives of the larger DAWN study were to increase understanding of psychosocial factors influencing diabetes outcomes and to identify opportunities to improve psychosocial management of diabetes.

The DAWN study used a cross-sectional design in which all data were self-reports. Structured interviews were conducted by telephone or face to face in the native language of each country. Interviews took 30–50 min to complete. Interviews were conducted in 13 countries representing 11 regions: Australia, France, Germany, India, Japan, the Netherlands, Poland, Scandinavia (Sweden, Denmark, and Norway), Spain, U.K., and U.S. There were three independent samples: 2,750 physicians (~250 per region: ~200 primary care and 50 diabetes specialists), 1,122 nurses (~100 per region: ~50 primary care and 50 diabetes specialists), and 5,104 adults with diabetes (~500 per region). This article only examines data from the physician and nurse samples.

Measures of psychosocial strategies

The two primary outcomes were measures of psychosocial strategies: provider psychosocial care and psychosocial specialist care. Provider psychosocial care was measured as the provider's personal provision of psychosocial support. Respondents were given a list of strategies and asked, "How often do you personally use each of the methods I am going to read out to encourage your diabetes patients to follow your recommendations? Is it always, often, seldom, or never?" Response options were scored often = 4 through never = 1. This measure is the mean of the three items from the list that represent psychosocial strategies: "Discussing their family or financial responsibilities, talking with their families, helping them plan their everyday routines." Psychosocial specialist care was measured as provider's referral of patients to psychosocial specialists. This was a single item: "I often refer diabetes patients for emotional or psychological support." Response options were scored as fully agree = 6 to fully disagree = 1.

Psychosocial problems and treatment resources

The predictors of using psychosocial strategies include several diabetes care provider perceptions of patient psychosocial problems and provider psychosocial treatment resources.

Patient psychosocial problem prevalence. Respondents were asked the percentage of their patients who experience each of the following five conditions: stress, anxiety, depression, denial, or burnout; separate questions were asked for type 1 and type 2 diabetic patients. The measure is the mean of all 10 items (range 0–100).

Patient psychosocial problem impact. This measure is the mean of two items: "Psychological problems play only a small part in noncompliance" and "For most of my diabetes patients there is no need for professional psychological support." Response options were scored as fully agree = 1 to fully disagree = 6.

Provider psychosocial skills. This measure is the mean of two items: "I am able to identify patients' psychological needs" and "I am able to provide all the psychological support my patients need." Response options were scored as fully agree = 6 to fully disagree = 1.

Psychosocial specialist availability to provider. This measure is a single item: "Outside expertise in emotional and psychological matters is available to me if I need it." Response options were scored as fully agree = 6 to fully disagree = 1.

On-site psychosocial specialist availability to provider. Respondents were asked: "Which of the following are based at the same location as you?" The measure is whether respondent answered affirmatively regarding any of the following: psychologist, psychiatrist, psychotherapist, or social worker/counselor. This factor was measured only among physicians. It is an indicator of ease of access to psychosocial specialists (in contrast to the general availability measure above).

National, demographic, and practice variables

To examine national differences in psychosocial strategies and perceptions, each analysis incorporates country comparisons. Also included in each analysis were provider demographic factors: sex (1 = female or 0 = male) and age (in years). Practice variables include urbanicity of practice location (4 = large city, 3 = other urban area, 2 = suburban area, and 1 = rural area), duration of provider practicing diabetes care (in years), percentage of patients who are "minority" (range 0–100), number of patients treated who have type 1 and type 2 diabetes, and whether one is a diabetes specialist (1 = yes or 0 = no).

Statistical analysis

Physician and nurse samples were compared using two-way ANOVA (profession and specialization) to control for the fact that the samples were designed to have different proportions of specialists versus generalists. Hierarchical multiple regression analysis (blocks are countries, respondent characteristics, and respondent perceptions) was used to examine psychosocial perceptions, resources, and strategies separately in the physician and nurse samples. Country differences were examined as dummy variables in which the U.S. was the reference category and each other country was compared with the U.S. Country differences were assessed when controlling for individual-level respondent characteristics and perceptions.

Each analysis included demographic and practice measures (years in practice, practice location, percent of patients who are minority, number of patients treated who have type 1 and type 2 diabetes, and whether one is a diabetes specialist). Sex was used in the physician analysis but not in the nurse analysis because there were too few male nurses to permit it. Analyses of provider psychosocial care incorporated the measures of perceptions of psychosocial problems and resources, and analyses of referral to psychosocial specialists also incorporated the measure of provider psychosocial care. The criterion for statistical significance was set at $P < 0.05$ and two tailed for all analyses. All analyses were conducted using SPSS Version 13.0 (SPSS, Chicago, IL).

RESULTS

— Table 1 presents the characteristics of the physician and nurse samples. As one would expect, these samples differed on all demographic and practice measures. In addition, nurses perceived psychosocial problems to be more frequent and have greater impact. Physicians perceived themselves to have

Table 1—*Physician and nurse sample statistics

Measure	Physicians	Nurses	Difference†
Country			NA
Australia	9.2	8.9	
France	9.3	10.0	
Germany	9.2	8.9	
India	9.3	9.2	
Japan	9.3	8.9	
The Netherlands	9.2	9.3	
Poland	9.2	8.9	
Scandinavia	8.8	8.9	
Spain	9.2	8.9	
U.K.	9.2	9.1	
U.S.	8.0	9.0	
Respondent			
Age (years)	46.6 ± 9.8	41.0 ± 8.6	$P \leq 0.001$
Sex (female)	27.4	95.2	$P \leq 0.001$
Practice location	3.1 ± 1.1	3.0 ± 1.2	$P \leq 0.01$
Specialist	23.5	53.4	NA
Practice duration (years)	16.0 ± 8.9	10.6 ± 7.3	$P \leq 0.001$
Number of type 1 diabetic patients	16.7 ± 28.8	12.7 ± 34.5	$P \leq 0.001$
Number of type 2 diabetic patients	61.7 ± 84.3	36.2 ± 76.1	$P \leq 0.001$
Percent minority patients	12.1 ± 18.4	13.7 ± 20.4	$P \leq 0.05$
Perceptions			
Psychosocial problem prevalence	25.1 ± 16.6	30.9 ± 18.7	$P \leq 0.001$
Psychosocial problem impact	3.7 ± 1.2	4.0 ± 1.2	$P \leq 0.001$
Provider psychosocial skills	3.9 ± 1.1	3.3 ± 1.2	$P \leq 0.001$
Psychosocial specialist availability	3.9 ± 1.7	3.6 ± 1.8	$P \leq 0.001$
On-site psychosocial specialist availability	0.3 ± 0.4	NA	NA
Provider psychosocial support	2.5 ± 0.6	2.7 ± 0.6	$P \leq 0.001$
Refer to psychosocial specialist	2.6 ± 1.4	2.8 ± 1.5	$P \leq 0.001$

Data are means ± SD or percent. *Means are adjusted for proportion of specialists in samples. †Difference between professions assessed with control for proportion of specialists in samples. NA, not applicable.

better psychosocial skills and greater availability of outside psychosocial support. Nurses more frequently provided psychosocial support and referred to psychosocial specialists.

Table 2 presents the correlates of physician perceptions of psychosocial problems and treatment resources and use of psychosocial strategies. In each analysis, the country in which physicians practiced was related to the dependent variable. For perceived problems and treatment resources, country accounted for 3.3–16.5% of the variance; for use of psychosocial strategies, country accounted for 12.3–14.9% of the variance. Physician and practice characteristics also accounted for significant variance in all dependent variables. They accounted for 0.6–11.0% of the variance in perceived problems and resources and 3.1–3.5% of the variance in psychosocial strategies. Physician perceptions of psychosocial problems and resources accounted for significant variation in both psychosocial strategies, ranging from 3.6 to 10.9%.

As hypothesized, psychosocial care strategies were used more by physicians who were specialists, those who perceived problems to be more common and severe, and those who had greater availability of psychosocial resources. Provider/practice characteristics and perceptions generally had similar relationships with the different primary outcomes; in only two instances did a factor have a significant positive relationship with one outcome and a significant negative relationship with another outcome: *1)* Practice duration had a significant positive relationship with provider psychosocial support and a significant negative relationship with specialist referral. *2)* Respondents' perceived psychosocial skills had a significant positive relationship with provider psychosocial support and a significant negative relationship with use of psychosocial specialists.

Table 3 presents the correlates of nurse perceptions and use of psychosocial strategies. The country in which nurses practiced was related to each dependent variable. For perceived problems and resources, country accounted for 8.4–25.6% of the variance; for use of psychosocial strategies, country accounted for 7.0–12.3% of the variance. Nurse and practice characteristics also accounted for significant variance in all dependent variables, 0.6–3.6% of the variance in perceived problems and resources and 2.5–4.6% of the variance in psychosocial strategies. Nurse perceptions of psychosocial problems and resources accounted for significant variation in both psychosocial strategies, ranging from 3.3 to 11.2%.

As hypothesized, psychosocial care strategies were used more by nurses who were specialists, by those who perceived problems to be more common and severe, and by those who had greater availability of psychosocial resources. Provider/practice characteristics and perceptions generally have similar relationships with the different primary outcomes, although a factor may not be significantly related to both outcomes.

CONCLUSIONS — Physicians and nurses participating in this study have different perceptions of and responses to patients' psychosocial needs. Compared with physicians, nurses perceive greater needs and see psychosocial problems as having greater impact on diabetes self-care and control. Nurses see themselves as less able to take care of all patient psychosocial needs, even though they provide more psychosocial care. Nurses also report greater availability of psychosocial specialists and more often refer patients to them. These differences may be a function of differences in the professional roles and responsibilities of physicians and nurses. A related possibility has to do with the different training of physicians and nurses; the former is oriented to medical management while the latter incorporates a focus on self-management support.

Results of regression analysis differ only modestly between physicians and nurses, with differences more a matter of degree than kind. Relationships significant in one sample are not necessarily significant in the other, but in no instance is there a significant negative relationship in one sample and a significant positive relationship in the other sample. Regression analyses reveal that each independent

Table 2—*Regression analysis of physician psychosocial perceptions and strategies (standardized regression coefficients)*

Independent variable	Psychosocial problem prevalence	Psychosocial problem impact	Provider psychosocial skills	Psychosocial specialist availability	On-site psychosocial specialist availability	Provider psychosocial care	Refer to psychosocial specialist
Country*							
Australia	−0.095†	−0.078‡	0.025	−0.043	0.053§	−0.100†	−0.019
France	−0.222†	−0.040	0.114†	−0.166†	−0.015	−0.078‡	0.055§
Germany	−0.200†	−0.043	0.135†	−0.041	−0.067§	−0.140†	0.053§
India	−0.202†	−0.164†	0.299†	0.016	0.089†	0.042	0.100†
Japan	−0.423†	−0.102†	0.000	−0.250†	0.148†	−0.129†	0.354†
The Netherlands	−0.340†	−0.130†	0.025	−0.037	0.079‡	−0.266†	−0.019
Poland	−0.189†	−0.019	0.023	−0.129†	0.020	−0.098†	0.003
Scandinavia	−0.238†	0.032	−0.040	−0.139†	0.114†	−0.228†	−0.096†
Spain	−0.255†	−0.055	0.137†	−0.109†	0.098†	0.046	−0.061§
U.K.	−0.231†	−0.047	−0.059§	−0.174†	0.087†	−0.085‡	−0.029
Respondent							
Age	−0.068‡	−0.075‡	0.035	0.003	−0.007	0.048	0.042
Sex (female)	0.057‡	0.046§	0.048§	0.023	−0.012	0.042§	0.023
Practice location	0.034	−0.004	0.021	0.047§	0.030	0.003	0.022
Specialist	0.030	0.103†	−0.167†	0.038	0.293†	0.108†	0.077†
Practice duration	0.013	−0.023	0.115†	0.025	−0.056§	0.053§	−0.062§
Number of type 1 diabetic patients	−0.022	0.012	0.031	0.023	0.050§	0.040§	0.073†
Number of type 2 diabetic patients	0.061‡	0.030	−0.032	−0.005	0.023	0.017	−0.064‡
Percent minority patients	0.138†	0.069†	−0.002	−0.018	0.033	0.040§	0.025
Perceptions							
Psychosocial problem prevalence						0.044§	0.079†
Psychosocial problem impact						0.115†	0.175†
Provider psychosocial skills						0.187†	−0.106†
Psychosocial specialist availability							0.215†
On-site psychosocial specialist availability							0.045§
Provider psychosocial care							0.145†
Change in R^2 for block 1 (countries)†	0.165	0.033	0.090	0.072	0.048	0.149	0.123
Change in R^2 for block 2 (respondent characteristics)†	0.025	0.030	0.045	0.006	0.110	0.031	0.035
Change in R^2 for block 3 (psychosocial problems, resources)†						0.036	0.109
Overall R^2	0.190	0.063	0.135	0.078	0.158	0.216	0.267

*U.S. is the reference category. †$P \leq 0.001$; ‡$P \leq 0.01$; §$P \leq 0.05$.

variable has a significant relationship with one or more dependent variables, and only one independent variable is not significantly related to any dependent variable in at least one of the samples (number of type 2 patients in the nurse sample).

The psychosocial care strategies in this study (provider psychosocial care and psychosocial specialist care) are positively associated. Physicians and nurses who use more psychosocial strategies themselves are more likely to seek assistance from psychosocial specialists. Thus, this study suggests that some providers have a more positive orientation toward psychosocial care than others and use all the relevant strategies at their disposal to achieve better quality care for their patients. However, physicians with higher self-perceived psychosocial skills are less likely to use psychosocial specialists; whether such physicians actually are more effective in resolving patients' psychosocial problems (reducing the need for referral) or simply assume that they have resolved patients' problems is a question that cannot be answered by this study.

Provider perceptions of the prevalence and consequences of psychosocial problems are associated with both psychosocial strategies but more strongly to referral to psychosocial specialist care than to provider psychosocial care. This may be a function of the nature of our measure of provider psychosocial care, which does not involve direct treatment of psychosocial problems. Diabetes care providers may deal with patients' everyday problems in managing diabetes but may refer patients whose psychosocial problems are more severe (those described by our measures of psychosocial problem prevalence and consequences) to psychosocial specialists for more intensive care.

National differences are striking and account for substantial variance in the dependent variables. Moreover, interesting patterns emerge when considering a particular country's profile. For example, U.S. physicians and nurses provide high levels of psychosocial support even

Table 3—*Regression analysis of nurse psychosocial perceptions and strategies (standardized regression coefficients)*

Independent variable	Psychosocial problem prevalence	Psychosocial problem impact	Provider psychosocial skills	Psychosocial specialist availability	Provider psychosocial care	Refer to psychosocial specialist
Country*						
Australia	−0.080†	−0.032	0.069	−0.064	0.008	0.166‡
France	−0.239‡	−0.042	0.267‡	−0.200‡	−0.089†	0.085†
Germany	−0.175‡	−0.118§	0.229‡	−0.075	−0.135‡	0.106§
India	−0.191‡	−0.294‡	0.403‡	−0.203‡	−0.072	0.147‡
Japan	−0.317‡	0.017	−0.119§	−0.365‡	−0.137§	0.145‡
The Netherlands	−0.435‡	−0.197‡	0.105§	−0.163‡	−0.178‡	0.022
Poland	−0.214‡	−0.147‡	0.261‡	−0.115§	−0.087†	0.099†
Scandinavia	−0.383‡	0.029	0.088†	−0.290‡	−0.197‡	−0.001
Spain	−0.395‡	−0.085†	0.250‡	−0.174‡	0.117§	0.016
U.K.	−0.242‡	−0.054	0.068	−0.199‡	−0.079†	0.083†
Respondent						
Age	−0.058†	−0.037	−0.030	−0.041	0.048	−0.052
Sex (female)	0.048	−0.041	0.004	0.028	−0.018	−0.037
Practice location	−0.016	0.079†	−0.011	−0.022	−0.006	−0.070†
Specialist	0.117‡	0.111‡	0.019	0.003	0.119‡	0.086§
Practice duration	0.022	−0.061†	0.061†	−0.014	0.009	0.015
Number of type 1 diabetic patients	−0.006	0.011	0.008	0.040	0.049	0.076§
Number of type 2 diabetic patients	0.050	0.028	−0.034	0.021	−0.022	0.027
Percent minority patients	0.098§	0.047	0.032	−0.041	0.008	0.057
Perceptions						
Psychosocial problem prevalence					0.124‡	0.116‡
Psychosocial problem impact					0.036	0.172‡
Provider psychosocial skills					0.173‡	0.049
Psychosocial specialist availability						0.245‡
Provider psychosocial care						0.132‡
Change in R^2 for block 1 (countries)‡	0.231	0.084	0.256	0.116	0.123	0.070
Change in R^2 for block 2 (respondent characteristics)‡	0.028	0.036	0.006	0.006	0.025	0.046
Change in R^2 for block 3 (psychosocial problems, resources)‡					0.033	0.112
Overall R^2	0.259	0.120	0.262	0.122	0.181	0.228

*U.S. is the reference category. †$P \leq 0.05$; ‡$P \leq 0.001$; §$P \leq 0.01$.

though they are among the lowest countries for providers' psychosocial skills; one reason is that the U.S. ranks among the highest countries for provider perception of patients' psychosocial needs (problem prevalence and impact). The U.S. is among the lowest countries in on-site psychosocial specialist availability and is low in psychosocial team care (which is facilitated by that availability). One anomaly is that the U.S. is high in psychosocial specialist availability but low in referral to these specialists (even though availability and referral are associated at the individual level). This may be due to health care system factors such as the insurance coverage for psychosocial specialists and suggests that country characteristics may override the preferences of individual providers.

Compared with diabetes nonspecialists, physicians who are diabetes care specialists perceive themselves as less skilled psychologically and have greater on-site availability of psychosocial specialists (the latter may be because diabetes specialists are more likely to practice in major medical centers). Both physician and nurse diabetes specialists see psychosocial problems as more common and/or severe, provide more psychosocial support than generalists, and are more likely to seek the services of outside psychosocial experts. Diabetes specialists, who are more likely to treat difficult cases, may be more cognizant of the problems in living with diabetes and the impact of these difficulties on patients. Diabetes specialists use significantly more psychosocial experts even when controlling for other factors that might account for the difference (e.g., perceived problems and availability of experts); perhaps this reflects a greater willingness of diabetes specialists to regard psychosocial issues as the domain of other types of specialists.

Patient case-mix is related to several psychosocial factors. A greater proportion of minority patients is associated with perceptions of higher problem prevalence and/or severity. Although the number of type 2 diabetic patients is associated with higher problem prevalence, it is associated with lower use of psychosocial specialists, and the number of type 1 diabetic patients is associated with higher use of psychosocial specialists. This may reflect a more general use of all types of specialists in managing type 1 diabetes.

Study strengths and limitations

This study is cross sectional and correlational in design, which makes it impossi-

ble to make conclusions about causal relationships. For example, diabetes care providers may refer their patients to psychosocial specialists because they are aware of the specialists' availability or they may become aware of the availability of the specialists' because they seek to make the referrals. The study is also limited to subjective measures of the key factors. While providers' perceptions are important in their own right, the validity of this study's findings should be confirmed using objective measures of the primary outcomes as well as their determinants (psychological problems and resources).

Although results for nurse diabetes specialists parallel those for physician diabetes specialists, the classification of nurse specialists is based on number of diabetic patients treated rather than degree/certification. Differences between nurse diabetes specialists and generalists might be greater if specialists were advanced practice nurses with specific training and/or certification in diabetes care and education.

Some of the significant relationships in these results are rather small in absolute size because statistical significance is rather easily achieved with the large samples here. Because the relationships examined here have received little study, we have used the conventional significance levels to help identify potential relationships worth additional research. But the importance of the smaller relationships is open to interpretation.

Finally, the interpretations of the observed empirical relationships presented here are largely speculative. They should be regarded as hypotheses suggested by the findings rather than confirmed by them. As such, they require confirmation by future research.

Implications

The main findings of this study can be summarized as follows: Nurses and diabetes specialists used psychosocial strategies more than physicians and nonspecialists. Psychosocial strategies were used more when practitioners believed that more patients had psychosocial problems and that these problems interfered more with diabetes control. Referral to psychosocial specialists was significantly more likely when practitioners perceived that professional psychological resources were more available.

This research has examined two strategies for managing the psychosocial needs of patients with diabetes. Both of these strategies have a place in the repertoire of the diabetes care provider. All patients are entitled to be treated by a provider who is sensitive to their psychosocial needs, and all providers should receive the training necessary to attain the appropriate level of expertise.

Yet, it is unreasonable to expect every diabetes care provider to be able to meet all of his/her patients' psychosocial needs, just as it is unreasonable to meet all other specialized care needs. For physicians, referral to nurses, who tend to provide greater levels of psychosocial support, may be an option. But sometimes this option may not be enough, a fact that has resulted in the demand for increased involvement of psychosocial specialists in diabetes care (23). In an ideal practice environment, psychosocial specialists are available on a routine basis as members of the diabetes care team. This permits the integration of psychosocial issues into regular multidisciplinary care (24). Research has shown that consultations between primary care providers and psychosocial specialists can improve patient outcomes and primary care provider satisfaction (25). Patients of nurses who monitor psychological status and incorporate these factors into their care planning have better psychosocial outcomes (26). And diabetes education incorporating coping skills training produced improved clinical and psychosocial functioning (23,24). But when psychosocial specialists are not part of the multidisciplinary team, it is even more important that providers have available a psychosocial specialist to whom patients can be referred when necessary.

The availability of psychosocial specialists was positively related to physician and nurse referral patterns, net of the perceived prevalence and severity of the problems for which patients are referred, and the referring provider's own skills for managing psychosocial problems. This suggests that increased availability of psychosocial specialists might increase their use. Other related issues, not addressed in this study, are whether the available psychosocial specialists are seen as competent to deal specifically with diabetes and whether providers' perceptions of the competence of psychosocial specialists play a role in their referral decisions.

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APPENDIX

International DAWN Advisory Panel members

Ib Brorly, Denmark; Ruth Colagiuri, Australia; P. Geelhoed-Duijvestijn, the Netherlands; Hitoshi Ishii, Japan; Line Kleinebreil, France; Rüdiger Landgraf, Germany; Torsten Lauritzen, Denmark; David Matthews, U.K.; A. Ramachandran, India; Richard Rubin, U.S.; Frank Snoek, the Netherlands.

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