

Exercise Counseling Practices Among Nephrologists Caring for Patients on Dialysis

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● **Background:** Patients on dialysis therapy are inactive, are at high risk for conditions that can be prevented or ameliorated by exercise, and often receive most of their care from their nephrologist. Exercise counseling by physicians can increase patients' levels of physical activity. The aim of the study is to determine the frequency of exercise assessment and counseling among practicing nephrologists, characteristics of nephrologists who provide exercise counseling to their dialysis patients, and barriers to exercise counseling perceived by nephrologists. **Methods:** A 25-item survey regarding exercise counseling was administered to nephrologists attending the World Congress of Nephrology meeting in 2001. **Results:** Five hundred five nephrologists completed the survey. Overall, 38% reported "almost always" or "often" assessing patient level of physical activity and counseling inactive patients to increase activity. Older ($P < 0.0001$), more active ($P = 0.033$), and women ($P = 0.018$) nephrologists, as well as those who provided primary care to more of their patients ($P = 0.007$), were more likely to provide exercise counseling. Nephrologists who do not provide routine counseling were more likely to endorse lack of time ($P < 0.0001$), lack of confidence in their ability to counsel patients ($P < 0.0001$), and lack of conviction that patients will respond as barriers to counseling ($P = 0.01$). In addition, noncounseling nephrologists were more likely to believe that other medical issues were more important than exercise ($P = 0.01$). **Conclusion:** Rates of exercise counseling among nephrologists are low, although dialysis patients are a high-risk group unlikely to receive advice about exercise from other health care providers. The low rates of counseling, particularly among younger nephrologists, could be addressed by including information about counseling in fellowship training and/or practice guidelines for the care of patients on dialysis therapy. *Am J Kidney Dis* 41:171-178.

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INACTIVITY IS WIDELY regarded as a risk factor for the development and progression of such chronic diseases as coronary artery disease (CAD) and hypertension. The US Surgeon General's report on physical activity and health concluded that "people of all ages, both male and female, benefit from regular physical activity" and "significant health benefits can be obtained by including a moderate amount of physical activity . . . on most if not all days of the week."¹ Several groups have recommended that physicians routinely assess physical activity levels and counsel sedentary patients to increase activity levels.² Several studies have tested strategies to increase counseling³ and have shown that, at least in the short term, advice from physicians can increase patients' self-reported physical activity levels. However, most of these studies focused on healthy patients and actively excluded patients with chronic diseases.³

The impact of such preventive interventions as exercise counseling on outcomes depends on the patient population in which they are used and its underlying risk for developing the target diseases. Although the focus of most recommendations about counseling has been healthy populations and primary care physicians, there are some

chronic disease populations in which CAD and hypertension are more common and for which increased physical activity has the potential to offer greater benefit than in the general population. These include patients with such conditions as diabetes mellitus, hypercholesterolemia, or end-stage renal disease (ESRD).

In patients with ESRD in particular, many patients already have CAD and hypertension, and all are at high risk for developing these conditions. Patients with ESRD have a 43% prevalence of CAD,⁴ and approximately 50% of

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deaths in this population are attributed to CAD.⁵ Furthermore, dialysis patients are extremely inactive.⁶ Therefore, although no randomized trial has examined the effect of exercise on mortality in patients with ESRD, they have not been excluded from the Surgeon General's recommendation that everyone exercise, and it is likely that they would benefit from increasing their activity levels.

In addition, for many patients with ESRD, a nephrologist serves as the primary provider.^{7,8} For these patients, if the nephrologist does not counsel about physical activity, it is unlikely that they will receive such counseling. However, nephrologists' practices regarding exercise assessment and counseling have not been studied since 1981.⁹ We performed a cross-sectional survey of nephrologists regarding their practices and opinions related to exercise counseling. Goals of the study are to: (1) determine the frequency of exercise assessment and counseling among practicing nephrologists, (2) determine characteristics of nephrologists who provide exercise counseling, and (3) delineate barriers to exercise counseling perceived by nephrologists.

METHODS

Study Subjects

Nephrologists attending the combined American Society of Nephrology/International Society of Nephrology World Congress of Nephrology meetings in San Francisco, CA, in October 2001 were surveyed in conjunction with conference registration. Nine surveyors manned conference registration areas, and potential study subjects were approached while they waited in line for registration or on completion of registration when there were no lines. All nephrologists who care for patients on dialysis therapy were eligible. The study was approved by the Committee on Human Research of the University of California, San Francisco, and verbal consent was obtained from all participants.

Study Questionnaire

The survey consisted of 25 questions regarding nephrologists' opinions and practices related to exercise counseling. Specifically, nephrologists were asked how often they assess patients' physical activity levels, counsel sedentary patients to increase activity, provide a specific exercise prescription, offer written information about physical activity, refer to such specialists as physical therapists or exercise physiologists, or provide exercise equipment for use in the dialysis unit. They then were asked to indicate their level of agreement or disagreement with a number of statements related to potential barriers to exercise counseling. Information also was collected about nephrologists' demographics and the

size and characteristics of their practices. Respondents also were asked for what percentage of their patients they provided primary care.

Finally, respondents were asked to rate their own level of usual physical activity on a scale of 1 to 8 based on the frequency and intensity of usual exercise activity,¹⁰ with 1 corresponding to "I do not exercise or walk regularly now and do not intend to start in the near future," and 8 corresponding to "I have been doing vigorous activity three to five times per week for 7 or more months." Responses 1 through 4 are less than the levels of activity recommended by the US Surgeon General,¹ and responses 5 through 8 are within the Surgeon General's guidelines. The questionnaire required approximately 5 to 10 minutes to complete and was anonymous.

Statistical Analysis

Characteristics of study subjects are described using mean \pm SD for normally distributed variables and median and 25th and 75th percentiles for non-normally distributed variables. Nephrologists from the United States were compared with those from other parts of the world by using *t*-tests, Mann-Whitney *U* tests, chi-square, and Kruskal-Wallis analysis of variance, as appropriate. Nephrologists who reported they "almost always" or "often" ask dialysis patients about their level of physical activity and counsel sedentary dialysis patients to increase physical activity were considered the counseling group and were compared with others by using the same statistical tests. For these comparisons, nephrologists were dichotomized into those who agreed or did not agree with each opinion statement. Forward stepwise multivariable regression was performed to determine which characteristics and opinions were independently associated with counseling behavior among nephrologists. Level of agreement with each opinion statement was coded from 0 (strongly disagree) to 4 (strongly agree). We consider a two-tailed *P* less than 0.05 to be statistically significant. All analyses were performed using Statistica software (StatSoft Inc, Tulsa, OK).

RESULTS

Characteristics of study participants are listed in Table 1. Five hundred five nephrologists completed the survey. Two hundred seventy-seven nephrologists (55%) were from the United States; the remainder were from Canada (29 nephrologists), Central or South America (32 nephrologists), Europe (94 nephrologists), Asia (36 nephrologists), Africa (7 nephrologists), Australia or New Zealand (11 nephrologists), the Middle East (8 nephrologists), the Caribbean (3 nephrologists), or unknown (8 nephrologists). Nephrologists from the United States were similar to those from other countries except that more US nephrologists were in private practice and more non-US nephrologists worked in government facilities.

Table 1. Characteristics of Study Participants

Variable	Overall (N = 505)	US Nephrologists (N = 277)	Non-US Nephrologists (N = 221)*
Age (y)	43 ± 9	43 ± 10	42 ± 9
Sex			
Men	405 (80.4)	224 (80.8)	177 (80.0)
Women	99 (19.6)	52 (18.8)	44 (20)
Unknown	1	1 (0.4)	0 (0)
Years of practice	12 ± 9	11.4 ± 9.4	12.6 ± 8.8
No. of patients	96 ± 108	84 ± 91	110 ± 126
Primary care (%)			
None	35 (7.0)	16 (5.8)	19 (8.7)
<25	96 (19.2)	58 (21.1)	37 (17.0)
25–50	106 (21.2)	62 (22.5)	44 (20.2)
51–75	108 (21.6)	58 (21.1)	46 (21.1)
>75	155 (31.0)	81 (29.5)	72 (33.0)
Setting			
Private practice	191 (38)	131 (47.3)	57 (26.0)†
Academic center	251 (50)	129 (46.6)	119 (54.3)
Fellow	51 (10)	27 (9.7)	23 (10.5)
Government facility	82 (16)	21 (7.6)	61 (27.8)†
Clinical (%)			
<50	110 (21.8)	67 (24.2)	43 (19.5)
50–100	230 (45.5)	109 (39.4)	116 (52.5)†
100	165 (32.7)	101 (36.5)	62 (28.1)‡
Physical activity meets Surgeon General's recommendations	187 (37.2)	101 (36.6)	83 (37.7)

NOTE. Values expressed as mean ± SD or number (percent)

*Includes one respondent from an unknown country in "non-US Nephrologists," but does not include others who did not designate a country of origin.

† $P < 0.05$ for the comparison between US and non-US nephrologists.

‡ $P < 0.005$ for the comparison between US and non-US nephrologists.

Nephrologists' opinions and practices regarding exercise counseling are listed in Table 2. Overall, 38% of nephrologists reported that they often or almost always ask patients about their activity level and counsel sedentary patients to increase their activity. Smaller numbers of nephrologists reported giving patients specific exercise recommendations, including frequency, duration, type, and intensity of exercise; offering written materials about exercise; referring patients to specialists; or providing equipment for use in the dialysis unit. Nearly all nephrologists agreed that physical activity is beneficial for both the general population and patients on dialysis therapy, and only 4.8% believed exercise is not important (or not as important as other medical issues) for dialysis patients. The most commonly endorsed reasons for not counseling patients to become physically active were a feeling that

dialysis patients would not follow suggestions to increase activity and a concern about the risks of exercise in dialysis patients.

Table 3 lists characteristics of nephrologists who reported that they frequently counsel patients about physical activity versus those who do not. Nephrologists who counsel were older and had been in practice longer. Nephrology fellows were less likely to report counseling patients about physical activity. However, counseling nephrologists were still significantly older and had been in practice longer even when fellows or those in practice less than 3 years were excluded ($P < 0.0001$). Female nephrologists, those in private practice, and those from the United States were more likely to counsel. Greater involvement in primary care of dialysis patients was associated with increased rates of counseling. Nephrologists who provide counseling to

Table 2. Opinions and Practices of Participants

	Overall (N = 505)	US Nephrologists (N = 277)	Non-US Nephrologists (N = 221)
Physical inactivity (sedentary lifestyle) is an important health risk in the general population.	494 (98.0)	280 (98.6)	221 (97.4)
Increasing physical activity is beneficial for most people.	502 (99.6)	284 (100)	225 (99.1)
Physical activity is beneficial for patients on dialysis.	488 (97.2)	278 (98.6)	216 (95.6)*
I am concerned about the risks of exercise in patients on dialysis.	188 (34.4)	81 (28.5)	94 (41.6)†
I do not believe that most dialysis patients would increase physical activity if advised to do so.	195 (38.7)	109 (38.5)	89 (39.0)
I do not have time to talk to dialysis patients about physical activity.	73 (14.6)	33 (11.7)	41 (18.1)*
I do not think dialysis patients are interested in the topic of physical activity.	102 (20.3)	58 (20.5)	45 (19.9)
I do not think exercise is important (or is as important as other medical issues).	24 (4.8)	16 (5.7)	8 (3.5)
I do not think it is the role of the physician to counsel dialysis patients about physical activity.	22 (4.4)	10 (3.5)	12 (5.3)
I do not feel confident in my ability to discuss this topic with patients.	50 (9.9)	25 (8.8)	26 (11.5)
Often ask	233 (46.3)	139 (48.9)	99 (43.8)
Often counsel	276 (55.1)	160 (56.5)	121 (53.8)
Often ask and counsel	191 (38.0)	111 (40.2)	75 (34.2)
Often prescribe	141 (28.2)	80 (28.5)	63 (27.9)
Often provide written material	29 (5.8)	12 (4.3)	17 (7.5)
Often refer	126 (25.1)	77 (27.2)	52 (23.0)
Often provide equipment	57 (11.4)	28 (9.9)	30 (13.3)

NOTE. Values expressed as number (percent).

* $P < 0.05$.

† $P < 0.005$.

their patients were more likely to report that their own physical activity meets the US Surgeon General's recommendations.

Of potential barriers studied, those endorsed by significantly more noncounseling physicians included lack of time for exercise counseling, a belief that patients would not adopt a more active lifestyle even if counseled, and lack of confidence in their ability to effectively counsel patients. On multivariate analysis (Table 4), younger age, male sex, less provision of primary care, lack of time, and lack of confidence remained significantly independently associated with non-counseling behavior. Physicians who were less active were more likely to believe patients would not increase their activity, more likely to believe that exercise is not as important as other medical

issues, and more likely to lack confidence in their ability to discuss exercise with patients.

DISCUSSION

The US Surgeon General and the American College of Sports Medicine recommended that all Americans engage in 30 minutes or more of moderate physical activity on most or all days of the week.¹ The Department of Health and Human Services set a specific goal that 50% of primary care providers would provide counseling about the benefits of exercise to greater than 80% of their patients by 2000.¹¹ Nevertheless, the rate of exercise counseling by primary care physicians generally is low.¹²⁻¹⁶ Although specialists frequently act as the primary provider for many patients with chronic conditions,¹⁷ the coun-

Table 3. Characteristics and Opinions of Nephrologists Who Often Ask About Physical Activity and Provide Counseling

Variable	Often Counsel (n = 191)	Do Not Often Counsel (n = 311)	P
Age (y)	45.6 ± 9.6	41.1 ± 8.8	<0.0001*
Sex			0.018
Men	143 (75)	259 (83.6)	
Women	48 (25)	51 (16.4)	
Unknown		1 (0.03)	
Years of practice	14.4 ± 9.8	10.4 ± 8.3	<0.0001*
United States	121 (63.4)	169 (54.3)	0.047
No. of patients	108.8 ± 125.6	86.5 ± 92.5	0.012
Primary care (%)			0.007
None	10 (5.2)	25 (8.1)	
<25	29 (15.2)	66 (21.5)	
25–50	40 (20.9)	66 (21.5)	
51–75	39 (20.4)	68 (22.2)	
>75	73 (38.2)	82 (26.7)	
Setting			
Private practice	84 (44)	107 (34.6)	0.037
Academic center	97 (50.8)	153 (49.5)	0.78
Fellow	13 (6.8)	38 (12.3)	0.049
Government facility	21 (11.0)	60 (19.4)	0.013
Clinical (%)			0.20
<50	36 (18.8)	73 (23.5)	
50–100	87 (45.6)	142 (45.7)	
100	68 (35.6)	96 (30.9)	
Physical activity meets Surgeon General's recommendations	82 (42.9)	104 (33.7)	0.033
Physical inactivity is an important health risk in the general population	189 (99)	302 (97.4)	0.17
Increasing physical activity is beneficial for most people	190 (99.5)	310 (99.7)	0.73
Physical activity is beneficial for patients on dialysis	190 (99.5)	296 (95.8)	0.008
Concerned about risk of physical activity in patients on dialysis	61 (31.9)	111 (35.9)	0.39
Do not believe dialysis patients would increase physical activity if counseled	60 (31.6)	133 (42.8)	0.01
No time	8 (4.2)	65 (21.2)	<0.0001
Dialysis patients not interested in physical activity	31 (16.3)	71 (23.0)	0.07
Exercise not important	3 (1.6)	20 (6.5)	0.01
Not physician's role to counsel about physical activity	5 (2.6)	16 (5.2)	0.16
Not confident in ability to counsel on physical activity	8 (4.2)	41 (13.2)	<0.0001

NOTE. Values expressed as mean ± SD or number (percent).

*P does not change if fellows or nephrologists in practice less than 3 years are excluded.

selling behavior of specialists rarely has been studied. Although specialists can provide counseling about physical activity to any of their patients, it may be particularly appropriate for them to do so for specific types of patients. These would include patients without a primary care provider, those at especially high risk for developing CAD, and patients with conditions that affect the type of exercise that can be performed. Examples of such chronic conditions might include human immunodeficiency virus infection

(in which a specialist is often the primary provider),¹⁸ diabetes mellitus (high risk for CAD),¹⁹ or multiple sclerosis (a condition that may affect the exercise tolerance of the patient).²⁰

As we found in our study, nephrologists are often the primary provider for dialysis patients.^{7,8} Furthermore, many dialysis patients have or will develop CAD and hypertension; thus, exercise counseling is relevant to all such patients as either a primary or secondary prevention strategy. In terms of limitations the chronic

Table 4. Multivariable Characteristics Associated With Counseling Behavior

Variable	Coefficient	P
No time for physical activity counseling	-0.12	<0.0001
Not confident in counseling ability	-0.07	0.005
Age (y)	0.01	<0.0001
Physical activity not important	-0.06	0.051
Male sex	-0.13	0.013
Percentage of primary care	0.33	0.035
Patients would not exercise if counseled	-0.034	0.094
Physical activity is beneficial for dialysis patients	0.063	0.088
No. of patients	0.0003	0.134

disease places on the type of physical activity that can be performed, a recent National Kidney Foundation Task Force on Cardiovascular Disease recognized that moderate exercise is feasible in many patients with chronic renal disease.²¹ The Task Force also concluded that physical activity can be increased by counseling.²¹

However, in our study, only 38% of nephrologists reported often assessing patients' levels of physical activity and counseling sedentary patients to increase their activity. This compares with a range of 18% to 69% reported in previous studies of primary care providers working with the general population^{12-16,22} and 16% reported in a study that included 23 nephrologists using data collected in 1981.⁹ Female nephrologists and those who exercise regularly were more likely to provide counseling to their patients, a finding similar to reports of counseling behavior by other groups of physicians.^{13,22,23}

However, the effect of age on counseling behavior has been less consistent in previous studies of generalists. Most have found no effect of age,^{12,13,23} although one study reported that younger internists counsel less¹⁶ and another reported that family practitioners younger than 50 years reported more assessment and counseling for risk factors in general.¹³ Younger family practitioners are believed to counsel more because preventive services have been emphasized in their training recently.¹³ Conversely, nephrology training currently focuses on the practical and technical aspects of delivery of dialysis, rather than preventive or primary care for dialy-

sis patients. The implication of the finding that younger nephrologists provide less counseling is that the situation will worsen unless fellowship training is changed to include exercise counseling.

We identified several potential barriers to exercise counseling among nephrologists. Nephrologists generally recognized the importance of increasing physical activity, but despite this, often do not actively encourage physical activity in practice. Lack of time and ability to counsel were the most important barriers identified. In addition, the perception that physical activity was less important than other aspects of medical care among dialysis patients was cited by more non-counseling physicians. These findings are consistent with the emphasis in training and such practice guidelines as Dialysis Outcomes Quality Initiative on management of the dialysis procedure itself and of specific side effects of kidney disease, such as anemia, bone disease, and malnutrition.²⁴⁻²⁷ The new Kidney Disease Outcomes Quality Initiative guidelines are being developed to lend a "public health approach" to chronic kidney disease, with one goal to "ameliorate the complication or comorbidities in those with chronic kidney disease."^{28,29} A set of guidelines covering exercise and/or rehabilitation or other prevention programs, such as smoking cessation, could be included in this initiative.

Development of comprehensive guidelines in this area would address the barriers to counseling identified in the current study. First, guidelines would be a clear statement that the nephrology community considers attention to physical activity an important part of the management of dialysis patients. Second, clear recommended methods of counseling could be incorporated to improve physician confidence. Alternatively, better use could be made of materials already available to assist nephrologists in prescribing exercise for patients on dialysis therapy.³⁰ These materials are available at no cost on the Internet (www.lifeoptions.org) and should be made available in all dialysis units and training programs. Other strategies that could improve nephrologists' counseling behaviors might include incorporation of physical activity assessment into the patient care plan in dialysis units and development of partnerships between nephrologists and physical therapists or exercise physiologists.

These approaches have in common that they would minimize the time burden identified by physicians in our survey and invest other members of the health care team in the problem of inactivity.³⁰

This study has several limitations. We surveyed only nephrologists attending the World Congress of Nephrology meeting, and they may not be representative of all nephrologists. Furthermore, for practical reasons, we studied a convenience sample rather than a random sample of meeting attendees, leading to possible sampling bias. However, our sampling strategy was designed to minimize this possibility. Attendees were approached in common areas of the conference center, mainly during the registration process, rather than in association with particular sessions or presentations. Another potential study limitation is the reliance on self-reported counseling practices rather than direct observation. Because most nephrologists agree that physical activity is important, they may have tended to overreport their counseling behavior or their own levels of physical activity. The survey was anonymous to limit this tendency, but we cannot be certain that it did not occur. Studies that have surveyed patients generally reported lower rates of counseling by physicians than those using data from physician self-report.³¹

This study shows considerable room for improvement in exercise counseling practice among nephrologists. We have identified some barriers to exercise counseling that can be targeted to accomplish a greater frequency of exercise counseling. Specifically, a lack of counseling skills and the perception that disease-related issues are of greater importance could be addressed by including information about counseling in fellowship training and/or practice guidelines for the care of patients on dialysis therapy.

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