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Who Participates in Chronic Disease Self-Management (CDSM) Programs? Differences between Participants and Non-Participants in a Population of Multi-Morbid Older Adults

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Abstract

BACKGROUND—Self-care management is recognized as a key component of care for multi-morbid older adults, but the characteristics of those most likely to participate in Chronic Disease Self-Management (CDSM) programs and how to maximize participation in such programs are unknown.

OBJECTIVES—To identify individual factors associated with attending CDSM programs in a sample of multi-morbid older adults.

RESEARCH DESIGN—Participants in the intervention arm of a matched-pair cluster-randomized controlled trial of the Guided Care model were invited to attend a six-session CDSM course. Logistic regression was used to identify factors independently associated with attendance.

SUBJECTS—All subjects (N=241) were 65 years or older, were at high risk for health care utilization, and were not homebound.

MEASURES—Baseline information on demographics, health status, health activities, and quality of care was available for CDSM participants and non-participants. Participation was defined as attendance at five or more CDSM sessions.

RESULTS—22.8% of multi-morbid older adults who were invited to CDSM courses participated in five or more sessions. Having better physical health (OR[95% CI] = 2.3[1.1–4.8]) and rating one's physician poorly on support for patient activation (OR[95% CI] = 2.8[1.3–6.0]) were independently associated with attendance.

CONCLUSIONS—Multi-morbid older adults who are in better physical health and who are dissatisfied with their physicians' support for patient activation are more likely to participate in CDSM courses.

Keywords

health promotion; self-management; geriatrics; Guided Care; chronic disease; selection bias

Introduction

There is growing interest in providing community-based self-management programs for older persons with multiple chronic conditions as an approach to preserving health and reducing health care costs.(1) The Chronic Disease Self-Management (CDSM) program equips patients with a set of skills (problem solving, decision making, resource utilization, building patient-provider partnership, self tailoring, and action planning) to manage a variety of chronic illnesses.(2) Studies have demonstrated the intervention's ability to decrease disability, improve self-rated health and health behaviors,(3–7) and healthcare utilization.(3–5) When offered through an integrated healthcare system, one study estimated cost-savings to be \$180 per patient.(6) The American Recovery and Reinvestment Act of 2009 allocated \$27 million toward disseminating CDSM programs, which are now being offered in 45 states.(8)

Although research on the efficacy of self-management programs is promising, its impact is limited to those who participate. Older adults' participation in health promotion programs is

generally low.(9–12) Those who self-select to participate may be more likely to possess favorable health behaviors than non-participants.(13, 14) Because surveys administered to non-participants have low response rates,(15) factors associated with non-participation have not been well described. Factors previously found to be associated with participation in health promotion programs include higher education level,(14, 16–21) higher socio-economic status,(11, 14, 16, 22, 23) younger age,(9, 16, 20, 24, 25) female gender,(11, 18, 26, 27) Caucasian race,(23, 26) better physical health,(9, 20, 22, 28) being married,(9, 16) practicing favorable health behaviors, (12–14, 28, 29) and enrollment in an HMO insurance plan.(30)

Little is known about the characteristics of people who attend self-management programs. Prior work is limited by incomplete data on non-participants,(15, 31) and is focused on disease-specific self-management programs (17, 24, 26, 32) that do not fulfill the needs of older adults with multiple comorbid illnesses. This study compares multi-morbid older adult participants and non-participants in a non-disease-specific CDSM course. Our objective was to determine the characteristics of the multi-morbid older adults who are most likely to participate in CDSM programs and, thereby, to inform future strategies for maximizing participation by these populations. In addition to the variables previously shown to predict participation in health promotion programs, we hypothesized the level of patient activation, patient perception of quality of chronic illness care, and difficulty with health activities would also predict participation in CDSM programs.

Methods

To identify factors independently associated with CDSM participation, we utilized baseline data on CDSM participants and non-participants from the intervention arm of a matched-pair cluster-randomized controlled trial of the Guided Care model.

Guided Care

The Guided Care RCT was approved by all relevant institutional review boards and is previously described in detail.(33, 34) Guided Care Nurses (GCN) worked in primary care practices to provide comprehensive chronic care to 50–60 multi-morbid older patients. The intervention arm involved 7 primary care practice sites: 3 HMO sites, 3 community-based practice sites, and 1 community hospital-based site.(35) Six-session CDSM courses were offered twice over the course of one year at each intervention practice site or at local libraries at no cost to participants. The study team recruited lay leaders for the Guided Care CDSM courses, which were not affiliated with any existing community health programs.

Subjects

Guided Care patients were aged 65 or older, had been seen by a participating physician within the previous year, and were predicted to be in the highest 25% of Medicare service utilizers using the hierarchical condition categories (HCC) predictive model.(36) Eligible patients who provided informed consent completed baseline interviews (N=485).(33) A total of 293 Guided Care participants were deemed eligible for the CDSM course by the GCNs based on requirements that they were cognitively intact and not homebound. Invitations were mailed to eligible participants and followed-up by the GCNs through telephone and in-person conversations. One practice site had no participation and was dropped from the analysis (N=42). We suspected the lack of participation at this site was due to contextual factors and would therefore bias the analysis focused on individual predictors of attendance. Ten additional patients for whom CDSM attendance data were not available were also excluded from the analysis, yielding a sample size of 241 patients for the analysis.

Measurements

The baseline patient interview collected information regarding demographics, health status, health activities, patient activation, and patient perceptions of the quality of their health care. Patients reported financial strain as having “not enough money to make ends meet” at the end of each month (compared to some money left over or just enough to make ends meet). Health status measures included self-rated health (poor=1 to excellent=5), receiving assistance with activities of daily living (ADL: dressing, eating, using the toilet, bathing, and transferring between a bed and chair) and instrumental activities of daily living (IADL: using the telephone, heavy housework, light housework, managing money and shopping), functional health (SF-36)(37), and number of self-reported chronic conditions (diabetes, hypertension, heart attack, angina, congestive heart failure, other heart condition, asthma/COPD/emphysema, arthritis, sciatica, cancer, osteoporosis, hip fracture, and Alzheimer’s). Health activities included difficulty getting to medical appointments, exercise in the past week, missed medications in the past week and sufficiency of emotional support (received sufficient emotional support, versus needed a lot or some more emotional support). Patient activation was measured using the Patient Activation Measure (PAM), a validated scale (0–100) that measures how confident, knowledgeable, and active patients are in managing their own health conditions.(38) Quality of chronic illness care was measured using the Patient Assessment of Chronic Illness Care (PACIC), a validated instrument which asks patients about the frequency with which they received care congruent with the chronic care model in five domains: goal setting, coordination of care, decision support, problem solving, and patient activation.(39) Missing values for baseline interview questions were imputed as previously described.(33)

CDSM participation was defined as documented attendance at 5 CDSM sessions. This was chosen as a clinically relevant outcome because the average number of sessions attended by subjects in the original CDSM randomized trial(4) and the Kasier Permanente prospective study(6) were 5.5 and 5.3 respectively. Sensitivity analysis was conducted with a threshold of 4 CDSM sessions.

Statistical Analysis

Logistic regression was used to identify individual factors associated with participation in CDSM programs. The regression model was adjusted for practice site using a fixed effect model to control for variation within practice sites.

We built a multivariate logistic regression model using any borderline significant variables (p-value <0.20) from bivariate relationships (adjusted for practice site) in addition to all theoretically relevant variables previously shown to influence participation health promotion programs (age,(9, 16, 20, 24, 25) gender,(11, 18, 26, 27) race,(23, 26) marital status,(9, 16) education,(14, 16–21) financial strain,(11, 14, 16, 22, 23) ADL or IADL impairment, SF-36 physical health score,(9, 20, 22, 28) and exercise behavior(28)). Analyses were conducted using STATA 10.0.(40)

Results

CDSM Attendees vs. Non-Attendees

Of the 485 participants enrolled in the intervention arm of Guided Care, 293 (60.4%) were eligible and invited to participate in the CDSM program. Ten patients had missing attendance records and 42 patients were excluded from the analysis due to a 0% participation rate at their practice site. Of the 241 remaining patients, 55 (22.8%) attended at least five CDSM sessions and were defined as attendees (Table 1). CDSM attendees reported higher SF-36 physical health scores (p=0.005), had fewer IADL impairments

($p=0.028$), and exercised more often ($p=0.052$) than patients who did not attend the program (Table 2).

Multivariate Model

All theoretically relevant variables previously shown to influence participation in other types of health promotion programs and any variable with a p -value <0.20 from the bivariate analyses were used to build a multivariate logistic regression model, adjusted for primary care practice ownership (Table 3). Having higher SF-36 physical health scores (OR[95% CI] = 2.3[1.1–4.8]) and rating one's physician as poor on the PACIC patient activation subscale (OR[95% CI] = 2.8[1.3–6.0]) were independently associated with CDSM attendance in the final model. Both SF-36 physical health score and the PACIC patient activation subscore remain independently associated with participation in the final model when the attendance threshold was changed to 4 sessions.

Discussion

Self-management is recognized as a priority for multi-morbid older adults, yet little information is available about who is most likely to participate in CDSM programs or how to maximize participation.(41) Prior studies have been limited by incomplete information on non-participants and a focus on disease-specific programs. This study offers insights regarding factors associated with CDSM participation among a diverse population of multi-morbid older adults.

Almost one-quarter of eligible multi-morbid older adults attended at least five CDSM classes. This rate is high relative to other many health promotion programs, where participation has ranged from 4.3% to 33%.(9–12) Unlike findings from other health promotion programs, age,(9, 16, 20, 24) gender,(11, 18, 26) race,(26) socio-economic status,(11, 14, 16, 22, 23) and education(14, 16–20, 24) did not demonstrate a statistically significant association with attendance in our study. CDSM programs may appeal to a broader demographic range because they are led by lay persons rather than health care professionals. Personalized recruitment by GCNs may have also allowed this CDSM program to reach a more diverse range of individuals.(13, 42, 43)

Consistent with other studies of health promotion programs,(9, 20, 22, 28) individuals who had higher physical function were twice as likely to attend CDSM classes compared to those with lower physical function. Healthier individuals face fewer physical barriers to participation in community classes and may be less likely to miss sessions.

Contrary to our hypothesis, our study did not find a significant association between patient activation measure (PAM) score and participation in CDSM.(13, 14) Likewise health behaviors, such as exercise, were not significant predictors of participation in the final model. Since the CDSM curriculum promotes patient activation, it is advantageous that the course reaches patients who are less engaged in their health care and presumably have the most to benefit. In this multi-morbid population, however, self-care motivation may be limited by physical capacity to follow-through with intended behaviors.

Finally, this study showed an interesting relationship between patient perceived quality of patient-activation support by a health care provider and participation in CDSM. Patients were more likely to participate if they rated their primary care providers as less supportive of patient activation (measured by the PACIC patient activation sub-score). The perception that one's physician is less supportive of patient activation may motivate that person to seek such support through other venues, such as CDSM courses. Quality of care has not previously been studied as a predictor of health program participation. These results should be

interpreted with caution as recent studies do not support the validity of the PACIC subscales, (44, 45) suggesting that the total PACIC score is the most reliable measure.

Limitations

Sample size was limited. One site was removed from the analysis due to 0% participation at that site. We believe lack of participation at this site was more likely the result of contextual factors than individual factors. Generalizability may be limited by similar motivations influencing both consent to participate in the Guided Care trial and CDSM attendance. Although we controlled for practice site variation through the inclusion of fixed effects in our model, our small sample size per site hampered our ability to explore whether the effects of individual factors are heterogeneous across sites. Finally, the small number of sites hampered our ability to evaluate the effect of site-level contextual factors on participation.

Applicability

This study suggests CDSM programs appeal to a diverse demographic range of older adults and can garner reasonable participation by older-adults with multi-morbidity. It is critical that future CDSM courses reach this older, multi-morbid population in order to maximize the potential impact on their health and health-care expenditures.(1, 6)

As federally-funded CDSM courses are disseminated nationally, it will be important to reach underrepresented populations such as older adults with poor physical health. It may be beneficial to advertise CDSM as a program that can fulfill an unmet need for patient activation support. Further work is needed to explore the influence of quality of care on participation rates and to investigate strategies to increase recruitment among older adults with multiple chronic conditions.

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TABLE 1

CDSM Attendance Pattern

Number of Sessions Attended	Community-based Practice			HMO Practice			Community Hospital-based Practice		
	Site 1 N(%)	Site 2 N(%)	Site 3 N(%)	Site 4 N(%)	Site 5 N(%)	Site 6 N(%)	All Sites N(%)		
None	23 (51.1)	28 (84.8)	24 (53.3)	23 (57.5)	26 (53.1)	22 (75.9)	146 (60.6)		
1-2	3 (6.7)	3 (9.1)	5 (11.1)	3 (7.5)	2 (4.1)	2 (6.9)	18 (7.5)		
3-4	7 (15.6)	0 (0.0)	7 (15.6)	4 (10.0)	4 (8.2)	0 (0.0)	22 (9.1)		
*5-6+	12 (26.7)	2 (6.1)	9 (20.0)	10 (25.0)	17 (34.7)	5 (17.2)	55 (22.8)		
Total Number of Patients	45 (100.0)	33 (100.0)	45 (100.0)	40 (100.0)	49 (100.0)	29 (100.0)	241 (100.0)		

*Three patients chose to attend both of the two CDSM courses offered.

TABLE 2

Characteristics of CDSM Program Attendees and Non-Attendees

Variable	Range	% of Attendees (n=55)	% of Non-Attendees (n=186)	OR [95% CI]*	p-value
Demographic Variables					
Age >85 [‡]	67–95	9.1	10.8	0.9 [0.3–2.5]	0.768
Female [‡]	-	58.2	55.9	1.0 [0.5–1.8]	0.903
Non-white race [‡]	-	50.9	52.7	0.7 [0.3–1.6]	0.375
Married currently [‡]	-	49.1	41.9	1.6 [0.9–3.1]	0.142
High school diploma [‡]	-	80.0	72.0	1.7 [0.8–3.7]	0.162
Financial strain [‡]	-	38.9	45.9	0.7 [0.4–1.4]	0.332
Health Status Variables					
Self-rated health 3 (Good)	1–5	69.1	56.5	1.4 [0.7–2.7]	0.336
1 ADL impairment	0–5	1.8	10.8	0.2 [0.0–1.5]	0.120
1 IADL impairment	0–6	18.2	37.6	0.4 [0.2–0.9]	0.028
ADL or IADL impairment [‡]	0–11	18.2	38.2	0.4 [0.2–0.9]	0.026
SF-36 mental health score > median 54	14–69	54.6	48.4	1.2 [0.6–2.2]	0.568
SF-36 physical health score > median 38 [‡]	14–63	69.1	43.0	2.6 [1.3–5.2]	0.005
Number of chronic conditions > median 4	0–10	46.9	42.4	1.3 [0.7–2.7]	0.440
Health Activities Variables					
PAM patient activation score > median 60 ^{**}	35–100	36.4	30.4	1.2 [0.6–2.3]	0.649
Difficulty getting to medical appointments	-	3.6	11.8	0.3 [0.1–1.2]	0.088
Exercised 1 day in past week [‡]	0–7	67.3	47.3	1.9 [1.0–3.7]	0.052
Missed medications 1 day in past week	0–7	30.9	25.4	1.3 [0.6–2.5]	0.508
Adequate emotional support	-	78.2	71.2	1.5 [0.7–3.2]	0.250
Health Care Quality Variables [‡]					
PACIC score < median 2.7	1–5	39.6	48.2	0.8 [0.4–1.4]	0.406
PACIC patient activation sub-score < median 3.0	1–5	67.3	54.0	1.8 [1.0–3.6]	0.068
PACIC delivery system sub-score < median 3.6	1–5	50.9	52.6	1.0 [0.5–1.9]	1.000
PACIC goal-setting sub-score < median 2.6	1–5	49.1	47.7	1.3 [0.7–2.5]	0.424

Variable	Range	% of Attendees (n=55)	% of Non-Attendees (n=186)	OR [95% CI] [*]	p-value
PACIC problem-solving sub-score <median 3.3	1–5	35.6	48.8	0.6 [0.3–1.2]	0.138
PACIC coordinations sub-score <median 2.6	1–5	46.6	46.5	1.1 [0.6–2.0]	0.851

^{*} adjusted for practice site

^{**} PAM (Patient Activation Measure)

[†] PACIC (Patient Assessment of Chronic Illness Care)

[‡] Factors previously associated with participation in other types of health promotion programs

TABLE 3

Multivariate Logistic Regression Model of Factors Influencing Participation in CDSM Programs among Multi-Morbid Older Adults *

Variable	OR [95% CI]	p-value
Age > 85 [‡]	0.9 [0.3–3.0]	0.903
Female [‡]	1.3 [0.6–2.8]	0.559
Non-white race [‡]	0.8 [0.3–2.0]	0.643
Married currently [‡]	1.6 [0.7–3.7]	0.237
High school diploma [‡]	1.3 [0.6–3.2]	0.494
Financial strain [‡]	1.0 [0.4–2.1]	0.932
ADL or IADL impairment [‡]	0.8 [0.3–1.9]	0.554
SF-36 physical health score > median 38 [‡]	2.3 [1.1–4.8]	0.036
Difficulty getting to medical appointments	0.3 [0.1–1.5]	0.143
Exercised 1 day in past week [‡]	1.5 [0.7–3.0]	0.299
PACIC patient activation sub-score < median 3.0 [‡]	2.8 [1.3–6.0]	0.007
PACIC problem-solving sub-score < median 3.0 ^{‡‡}	0.5 [0.2–1.0]	0.057

* Model adjusted for practice site.

[‡] Factors previously associated with participation in other types of health promotion programs

[‡] The PACIC patient activation sub-score includes 3 questions: 1) How often was I asked for my ideas when we made a treatment plan, 2) How often was I given choices about treatment to think about, and 3) How often was I asked to talk about any problem with my medicines or their effects.

^{‡‡} The PACIC problem-solving sub-score includes 4 questions: 1) How often I was sure that my doctor or nurse thought about my values, beliefs, and traditions when they recommended treatments to me, 2) How often I helped make a treatment plan that I could carry out in my daily life, 3) How often I helped plan ahead so I could take care of my condition even in hard times, and 4) How often I was asked how my chronic condition affects my life.