Standardized Telephonic Case Management in a Hispanic Heart Failure Population
An Effective Intervention

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Abstract

Background: Heart failure (HF) is as common in Hispanic as it is in non-Hispanic populations. However, there do not appear to be any published reports of HF disease management programs which include Hispanic populations.

Objective: To test the effectiveness of a standardized telephonic disease management intervention, Pfizer Inc.'s *At Home With Heart Failure*™, in decreasing acute care resource use and cost in Hispanic patients with HF.

Participants and methods: A factorial design was used to analyze data obtained in a randomized controlled clinical trial. Patients with HF were enrolled in the trial when admitted to hospital, randomized to the intervention or usual care control groups, and followed for 6 months. Of the 358 participants, 93 (26%) were Hispanic (35 in the intervention group, 58 in the usual care group). Data were analyzed to determine if comparable decreases in acute care resource use were evident in Hispanic and non-Hispanic intervention group patients.

Intervention: Registered nurses telephoned patients after hospital discharge to provide advice, solve problems, encourage adherence, and facilitate access to needed services.

Results: Acute care resource use was lowered as effectively in the Hispanic patients as in the non-Hispanic patients, despite significant between-group differences in education, income, and living situations. When a fully crossed (language by group) analysis was conducted, no significant differences were found between the Hispanic and non-Hispanic intervention groups. However, in most categories there was a trend towards lower resource use in the Hispanic intervention group. The cost of inpatient care was more than $US1000 (2000 values) less in the Hispanic than the non-Hispanic intervention group.

Conclusion: The results of this study suggest that Hispanic patients with HF are receptive of, and responsive to, a case management intervention provided in a culturally competent manner, despite differences in cultural views on chronic illness and self-care as discussed in the literature.

analysis will thus allow examination of the interactions between groups (Hispanic versus non-Hispanic) as well as between types of treatment (telephonic case management versus usual care).[25] For example, certain factors may interact, combine, reinforce, interfere with or counteract each other, and such an effect is only evident in a factorial design. Although repeated measures (3- and 6-month data) were available, mixed analysis of variance (ANOVA) was not conducted because little variability in rehospitalization rates was expected over the 3-month intervals.

Two hospitals from the healthcare system participated; one of these is close to the US border with Mexico and admits predominately Hispanic patients, many of whom have HF. Most of the Hispanics in this study were admitted to that hospital. The methods used in this study are described in detail elsewhere and summarized briefly here.[24]

Participants

Eligible patients were identified during admission to hospital for HF and invited by bilingual/bicultural research associates to participate in the study. Approximately 1145 patients hospitalized at the two participating hospitals and diagnosed with HF by their physician were screened to assure that they spoke either English or Spanish and were cognitively competent. Patients with primary renal failure requiring dialysis were excluded, as were those who were discharged to an extended care facility. Of the 1145 patients screened, 573 patients were eligible to participate (50%) and 358 (62% of those eligible) were included in the study. Some of those who were eligible refused to participate (n = 148, 25.8%), others were under the care of a physician who refused the intervention (n = 29, 5.1%), some withdrew during the course of the study (n = 28, 4.9%), and others were dropped for reasons such as having moved out of the country (n = 10, 1.7%). Of the 358 participants, 93 (26%) were Hispanic, defined as speaking primarily Spanish. In the intervention group of 130 patients, 35 were Hispanic (26.9%). In the usual care control group of 228, 58 (25.4%) were Hispanic. Six study participants were excluded from this analysis because their primary language was neither English nor Spanish.

In order to avoid the possibility that the medical care provided to patients in the control group of a given medical practice might be changed by having patients in the intervention group, patients were randomized according to their physician. Physicians known to admit HF patients to either of the participating hospitals (n = 281) were matched on specialty, practice size, and number of HF admissions in the prior year and randomized to an intervention or usual care control group. Patients hospitalized for HF were assigned to the group to which their primary physician

had been randomized. This resulted in an unequal number of patients in the two groups. Not all physicians were willing to allow their patients to be offered case management, which limited the number of patients in the intervention group. However, all patients of physicians randomized to the control group were included.

Intervention

The intervention was nurse case management provided by telephone, standardized through a computer software program entitled *At Home with Heart Failure*™. The software program was designed to facilitate proactive education and support of patients with HF. Detailed educational scripts and talking points were included in the software on a variety of topics such as signs and symptoms, when to seek medical attention, daily weights, medication compliance, low salt diet, exercise, smoking and alcohol avoidance, advance directives, influenza and pneumonia vaccination. Software features that support the case manager included electronic charting and reports, automated task lists, and decision support tools. Language-appropriate standardized educational mailings were sent to patients monthly for the first 4 months. Physicians were sent a copy of the Agency for Health Care Policy and Research (AHCPR; US Department of Health and Human Services) guidelines for systolic HF with the first patient report sent by the case manager.[26]

Procedure

After obtaining informed consent, a nurse case manager telephoned patients in the intervention group within 5 days of hospital discharge. An average of 17 (median 14; interquartile range 11 to 22) telephone calls of decreasing length, intensity, and frequency were provided by the nurse case manager over a 6-month period. Case managers interacted with each patient for a total of approximately 16 hours; time was spent in telephone calls with patients and/or family members, in speaking with physicians or other team members, and in finding resources requested by patients (e.g. durable medical equipment, dietary information).

Culturally-competent intervention strategies included consent forms and educational materials in English and Spanish, a bilingual/bicultural nurse case manager for the Hispanic patients, and a bilingual/bicultural research assistant for enrollment and data collection. The staff interacting with patients were mindful of key principles of particular importance to Hispanics, such as the importance of family, harmony and respect.[27,28] Providing the intervention by telephone bypassed the need for administrative and organizational accommodations (e.g. clinic hours) that have been shown to decrease access to care among Hispanics.[29]

Measurement

The primary outcome in this study was the mean number of HF rehospitalizations over a 6-month period. The hospitalization rate was defined as the number of hospitalizations per patient in the group. Although most investigators report hospitalization rates in this manner,[9-12] these rates are influenced significantly by those few individuals who have multiple hospitalizations. Readmission rates, also commonly reported in the literature and easily interpreted, were calculated as the percentage of patients readmitted to the hospital at least once.[10,30] Both are reported here. Data on HF rehospitalizations and other indicators of acute care resource use (e.g. days in the hospital, cost) were obtained from automated hospital records using Ecliptys (formerly Transition Systems Inc. of Atlanta, GA) software; out-of-system admissions were identified by patient self-report. A list of diagnosis-related codes at hospital discharge was generated from the administrative billing system and examined. A hospitalization was judged as HF-related by a single expert Clinical Nurse Specialist. If there was any question about the reason for rehospitalization, the discharge summary was reviewed. In no case was the expert unable to make a clear determination of the reason for hospitalization.

Secondary outcomes included all-cause hospitalization rates, HF and all-cause readmission rates, average number of days in the hospital (HF and all-cause), multiple readmissions (>1), acute care costs (HF and all-cause), out patient resource use (e.g. office visits, electrocardiograms), and satisfaction with care. Mean number of days in the hospital was calculated using the number of days spent in the hospital for each readmission, not counting the index admission. Acute care costs were assessed at 3 and 6 months using a combination of direct (cost of care) and indirect (overheads) costs available from the hospitals' financial reports.

In addition to acute care resource use, patient satisfaction was measured in each group at the end of the 6-month follow-up period using an investigator-designed survey administered by telephone. The survey was a 5-point Likert-type scale with five items addressing current treatment, convenience of healthcare, education, medication schedule and care from the physician.

Information on demographic characteristics was collected on all participants at entrance into the study using an investigator-designed survey. Participants were coded as Hispanic or non-Hispanic based on their self-reported primary language. Clinical data were collected from the hospital records. Functional status was measured using the New York Heart Association (NYHA) functional classification system. A single masters-qualified nurse practitioner rated NYHA class for every patient based on information available in the hospital records. Comorbidity was measured using the interview format of the Charlson Index.[31] Groups were assessed for differences in severity of illness during their index hospitalization using the 3M-refined DRG technique (St. Paul, Minnesota). Baseline drug therapy was obtained from index hospitalization medical records. Subsequent drug therapy was obtained by patient self-report at 3- and 6-month intervals.

Analysis

Statistical assumptions were assessed by analytical testing and graphical display using the SPSS-10.0.5 program (Chicago, Illinois). Descriptive statistics and frequencies were computed and compared to assess equality of demographics and clinical characteristics at baseline in the Hispanic and non-Hispanic groups. The non-Hispanic patients were significantly better educated, earned higher incomes, and were more likely to be living alone (table I). The incidence of two coexisting illnesses – diabetes mellitus and chronic lung disease – differed between the groups. Since these differences could influence the outcomes, they were assessed as possible covariates in the analysis. Zero-order correlations between these variables and the outcome variables were evaluated. There were no substantial associations ($r > 0.3$) with any outcome variable for education, income, living situation, diabetes mellitus, or chronic lung disease. Therefore, none of these variables was used as a covariate in subsequent analyses.

The efficacy of the intervention was assessed in the primary analysis by comparing outcomes between the intervention and usual care control groups 3 and 6 months following discharge from the index hospitalization. Then, to determine whether the intervention was as effective in Hispanic and non-Hispanic patients, the two-way interaction of language (primary language

Table I. Summary of baseline demographic variables for Hispanic (primary language Spanish) and non-Hispanic patients admitted to hospital with heart failure

Variable	Hispanic n = 93	Non-Hispanic n = 259
Age in years (± SD)	72.25 ± 10.93	71.68 ± 13.06
Female gender	58.1%	48.6%
Married	51.6%	41.3%
Single	9.7%	10%
Divorced or separated	10.8%	12%
Widowed	28%	36.7%
Education less than high school (n = 242)	81.6%	13.3%[a]
Annual income less than $US20 000 (n = 164)	88%	65.4%[a]
Lives alone (n = 242)	18.4%	37.2%[a]

a p < 0.05.

SD = standard deviation.

English versus Spanish) by treatment group (intervention versus usual care) was assessed at 3 and 6 months using ANOVA. An α level of 0.05 was the accepted type I error rate when testing the primary outcome. A conservative adjustment of the nominal α rate (e.g. Bonferroni) was not made for the analysis of the secondary outcomes because they were exploratory in nature and meant to be hypothesis-generating. Effect sizes were examined for each analysis.

Results

The sample as a whole was elderly (mean age 72 years), female (51%), unmarried (56%), educated at the high school level or above (73%), earning little income (less than $US20 000 annually) [69%], and living with someone (67%). Most were functionally compromised at the time of their index admission (97% NYHA class III or IV). Many (66%) of the patients had been diagnosed with HF more than 2 months before enrolment and therefore were assumed to be familiar with how to care for themselves with respect to this diagnosis. About half of the full sample was moderately ill during their index admission.

The Hispanic participants were predominately female (58%) and married (51.6%; table I). Significant intergroup demographic differences were evident in education (81.6% of Hispanics reported less than a high school education), income (88% earning less than $US20 000 annually), and living situation (only 18.4% lived alone).

The clinical characteristics of the two language groups at enrollment are summarized in table II. The Hispanic participants were predominately functional class IV at enrolment, moderately ill during hospitalization, and newly diagnosed with HF. Most had systolic dysfunction. Ischemic disease was the most common HF etiology. The only language group differences were in comorbid illnesses; Hispanics were more likely to have diabetes mellitus while the non-Hispanics were more likely to have chronic lung disease.

The data were analysed first to determine if comparable decreases in acute care resource use were evident in both Hispanic and non-Hispanic intervention group patients in relation to the the control group. There were trends for distinct language group differences in both the intervention and control groups at 3 months, which may reflect institutional practices (figure 1). When analysed statistically, no significant difference was found between the two treatment groups in HF hospitalization, the primary outcome variable, when a fully crossed (language by group) analysis was conducted at 3 months (F = 2.51, degrees of freedom (df) = 3.348, p = 0.11).

Table II. Summary of baseline clinical variables for Hispanic (primary language Spanish) and non-Hispanic patients admitted to hospital with heart failure

Variable	Non-Hispanic (n = 259)	Hispanic (n = 93)
NYHA Functional Status (n = 347)		
Class I	0	0
Class II	3.14%	2.17%
Class III	39.61%	32.6%
Class IV	57.25%	65.2%
Mean functional status ($\pm$SD)	3.35 ± 1.65	3.49 ± 1.41
Comorbidity category (n = 242)		
Low	40.96%	46.9%
Moderate	40.96%	34.7%
High	18.1%	18.4%
Mean level of comorbidity ($\pm$SD)	2.54 ± 1.47	2.43 ± 1.53
Severity of illness (n = 345)		
Low	11.76%	17.78%
Moderate	49.8%	50%
Major	35.3%	24.4%
Severe	3.1%	7.8%
Mean severity score ($\pm$ SD)	2.30 ± 0.71	2.22 ± 0.83
Newly diagnosed with HF (n = 228)	43.24%	58.14%
Ventricular dysfunction (n = 262)		
Systolic (EF <40%)	54.1%	50%
Diastolic (EF $\geq$50%)	34.5%	44.1%
Midrange (EF = 40-49%)	10.3%	4.4%
Mixed	1%	1.5%
Mean EF (n = 202) [$\pm$ SD]	41.64 ± 8.93	46.46 ± 15.49
Etiology of HF (n = 347)		
Ischemic	48.44%	47.25%
Hypertensive	21.1%	20.9%
Valve disease	9.8%	9.9%
Other (e.g. alcoholic, idiopathic, peripartum)	20.7%	22%
Discharge medications (n = 326)		
Digoxin	62.65%	60%
ACE inhibitor	53.5%	52.9%
β-blocker	17.8%	14.12%
Calcium channel blocker not approved for HF	13.7%	11.8%
Diuretic	85.9%	85.9%
Major comorbid illnesses (n = 350)		
Hypertension	70%	65.2%
Chronic obstructive pulmonary disease	38.76%[a]	26.1%
Coronary artery disease	65.1%	63%
Cerebrovascular accident	9.7%	10.9%
Diabetes mellitus	34.9%[a]	59.8%
Atrial fibrillation at discharge (n = 349)	26.1%	18.5%
Alive at 6 months (n = 352)	86.1%	88.2%

a   p < 0.05.

EF = ejection fraction; **HF** = heart failure; **NYHA** = New York Heart Association; **SD** = standard deviation.
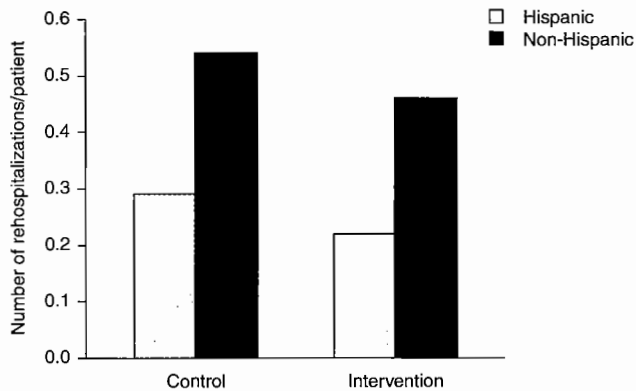
Fig. 1. Incidence of rehospitalization for heart failure in Hispanic (primarily speaking Spanish) and non-Hispanic patients 3 months after initiation of telephonic case management intervention. The rate of rehospitalization for heart failure was higher in the non-Hispanic sample than in the Hispanic sample, regardless of treatment group. As most of the Hispanic patients were enrolled from one hospital, the differences at 3 months may reflect institutional practice differences.

At 6 months, an interaction between language and treatment was apparent, with fewer rehospitalizations in the Hispanic patients than the non-Hispanic patients (figure 2). HF rehospitalizations were 75% lower at 6 months in the Hispanic intervention group than in the Hispanic control group. In the non-Hispanic sample, HF rehospitalizations were 36.8% lower at 6 months in the intervention group than in the control group. No significant differences were found when a fully crossed language by group statistical analysis was performed (F = 1.38, df = 3.348, p = 0.24). That is, the intervention was equally effective in the Hispanic and non-Hispanic intervention groups. Interestingly, in all except one category of resource use (all-cause hospitalization duration at 6 months), when the two intervention groups were compared (Hispanic and non-Hispanic), there was a trend towards lower resource use in the Hispanic intervention group patients (table III). The cost of inpatient care was more than $US1000 (2000 values) less in the Hispanic than the non-Hispanic group. The power of these analyses was low, however, because of the small size of the Hispanic sample. The effect size associated with most analyses was only in the 0.2 to 0.3 range; no coefficient exceeded 0.398 (HF hospital days at 3 months).

Discussion

Heart failure rehospitalization and other indicators of acute care resource use such as days in the hospital and cost were lowered as effectively in the Hispanic patients as in the non-Hispanic patients, despite of significant demographic differences in education, income, and living situation. The results of this study suggest that the cultural differences in views on chronic illness and

self-care discussed in the literature may not translate into lack of responsiveness to an educational intervention such as that used in this study.

The findings of this study are in sharp contrast to published opinions that Hispanic patients are less willing or less able to modify their life-style in response to illness than other population groups.[32] Hispanic patients in this study responded well to a case management intervention that was provided in a culturally competent manner. This observation is consistent with that of others who have demonstrated that Hispanics are responsive to health education that is provided in a manner that is sensitive to their cultural values and language preferences.[21,33-35]

Much of the literature on Hispanics focuses on differences in attitudes and beliefs when Hispanics are compared to non-Hispanics and other minority groups in the US.[17,29,36] Certainly there are differences in attitudes and beliefs when cultural groups are compared but this study suggests that there may be more similarities than differences between Hispanics and non-Hispanic persons with HF. Weller and colleagues[37] argue that variations in survey responses regarding symptoms and treatments for diabetes reflect a lack of knowledge or experience rather than different cultural beliefs. Mosca and colleagues[38] speculate that knowledge influences perceptions of heart disease risk more than ethnicity. The results of this study support these observations. When the Hispanic patients were educated about how to care for
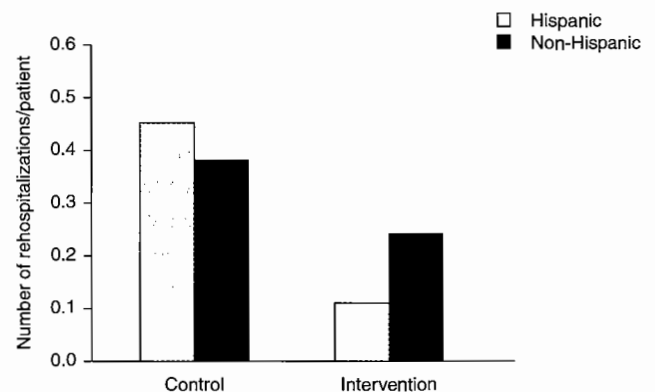

Fig. 2. Incidence of rehospitalization for heart failure in Hispanic (primarily speaking Spanish) and non-Hispanic patients 6 months after initiation of telephonic case management intervention. The benefits of intervention were most apparent at 6 months. Rehospitalization for heart failure was lower in the two intervention groups (Hispanics and non-Hispanics) than in the usual care control groups. The more pronounced decrease in rehospitalization among Hispanic intervention patients than among non-Hispanic intervention patients indicates an ordinal interaction. Although differential treatment effectiveness was not demonstrated in statistical analysis, over time there was a trend for the intervention to reduce rehospitalization for heart failure more effectively in the Hispanic intervention group than in the non-Hispanic group.

Table III. Summary of acute care resource use in Hispanic (primary language Spanish) and non-Hispanic patients receiving telephonic case management intervention (n = 126) or usual care (controls; n = 226) for heart failure (HF) after 3 and 6 months. A two-way interaction of treatment by primary language (Hispanic vs non-Hispanic) was used (2000 values)

Variable	Timing	Non-Hispanic usual care group (n = 168) [± SD]	Hispanic usual care group (n = 58) [± SD]	Non-Hispanic intervention group (n = 91) [± SD]	Hispanic intervention group (n = 35) [± SD]	P value[a]
HF hospitalization rates (admissions/patient)	3mo	0.29 ± 0.58	0.34 ± 0.71	0.22 ± 0.49	0.06 ± 0.24	0.11
	6mo	0.38 ± 0.71	0.45 ± 0.82	0.24 ± 0.52	0.11 ± 0.40	0.24
All-cause hospitalization rates admissions/patient	3mo	0.54 ± 0.77	0.78 ± 1.1	0.46 ± 0.73	0.43 ± 0.74	0.19
	6mo	0.77 ± 0.97	1.0 ± 1.36	0.62 ± 0.83	0.57 ± 1.04	0.21
HF readmission rates (%)	3mo	22.6	22.4	18.7	5.7	0.12
	6mo	26.8	29.3	19.8	8.6	0.14
All-cause readmission rates (%)	3mo	39.9	43.1	34.1	31.4	0.63
	6mo	48.2	53.4	44.0	34.3	0.23
Time in hospital (HF; days)	3mo	1.3 ± 3.2	2.1 ± 5.2	1.07 ± 2.6	0.37 ± 1.5	0.09
	6mo	1.8 ± 4.0	2.67 ± 5.5	1.2 ± 2.6	0.94 ± 4.0	0.27
Time in hospital (all-cause; days)	3mo	2.9 ± 6.7	4.9 ± 8.3	2.5 ± 4.8	2.6 ± 5.4	0.24
	6mo	4.1 ± 7.7	6.5 ± 9.7	3.1 ± 5	4.3 ± 9.7	0.54
Inpatient HF costs ($US)	3mo	1280 ± 3797	2038 ± 6039	1305 ± 4115	250 ± 1036	0.17
	6mo	2019 ± 6903	2487 ± 6130	1428 ± 4143	562 ± 2229	0.17
Inpatient all-cause costs ($US)	3mo	3218 ± 8590	4578 ± 8335	3169 ± 7125	3261 ± 7692	0.54
	6mo	4891 ± 11292	6790 ± 12687	3992 ± 7447	4753 ± 12482	0.21
Mean time to rehospitalization (days)	6mo	118.1 ± 72.1	111.21 ± 73.8	127.8 ± 69.5	134.9 ± 67.6	0.43
Multiple readmissions (%)	6mo	20.8	25.9	13.2	11.4	0.49
Emergency department visits/patient	6mo	0.11 ± 0.35	0.07 ± 0.27	0.15 ± 0.49	0.13 ± 0.34	0.86
Physician office visits/patient	6mo	6.11 ± 4.76	5.21 ± 2.61	5.83 ± 3.6	4.87 ± 3.37	0.97
Patient satisfaction (aggregate of points on a survey) [n = 182]	6mo	21.71 ± 3.38	21.54 ± 3.99	22.59 ± 3.08	23.46 ± 2.02	0.39

a   Treatment group by primary language interaction.

SD = standard deviation.

themselves after diagnosis of HF, their hospitalization rates declined as significantly as did those of the non-Hispanic patients. This finding suggests that receptiveness to the intervention and the knowledge to be gained were similar between the two groups.

One interesting observation is that, although there was a trend for lower acute care resource use in the Hispanic patient group, the average duration of all-cause hospital stay was more than a day longer than in the non-Hispanic patient group. One reason for this trend toward longer stays may be that few of the nursing staff at the hospital spoke Spanish. According to the 1990 census, approximately 39% of Mexican-Americans speak English poorly.[28] Lack of language abilities are even more pronounced in the older Hispanic population, the population included in this study.[28] It may be that hospital discharge was delayed because of inability of the nursing staff to educate patients until a bilingual family member arrived. Prior investigators have suggested that communication difficulties is an important factor serving to decrease Hispanic patient access to adequate healthcare.[39-41] Lack

of language ability limits access to care and may explain the lower health status of Hispanics in the US.[28] If inability of staff to communicate with patients is found to increase duration of hospitalization, efforts need to be undertaken to increase the language abilities of staff nurses. It may be, however, that the trend towards a longer hospital stay reflects physician or regional practice patterns. Further research is needed to identify the reason why all-cause duration of stay was longer in the Hispanic patient group.

The primary limitation of this study was insufficient sample size in the Hispanic patient group. Post-hoc power analyses revealed that power was inadequate to reveal differential treatment efficacy. The fact that all measures of acute care resource use except all-cause hospitalisation duration were lower in the Hispanic patients suggests that perhaps, with a larger sample size, the intervention might have been shown to be even more effective in the Hispanic than the non-Hispanic patient group. Further research is needed to test this hypothesis.

Another limitation involves the manner in which patients were classified as Hispanic or non-Hispanic. There is growing recognition that many persons in the US are multiracial and multicultural. These realities make identification of a single race or cultural group problematic. Therefore, in this study, participants indicating that Spanish was their primary language were classified as Hispanic while those indicating English was their primary language were classified as non-Hispanic. We recognize that Hispanics who grow up in the US may claim English as their primary language but identify with the Hispanic culture and these Hispanics would have been misclassified as non-Hispanic with this method. However, well acculturated Hispanics can also be expected to hold many of the beliefs of the mainstream US population. Therefore, we believe that classifying patients based on primary language facilitates our ability to examine the true population of interest.

Conclusion

In summary, this randomized clinical trial demonstrated that a standardized, culturally competent, case management intervention for patients with HF was as effective in a Hispanic population as it was in a non-Hispanic population. Clinicians and investigators who hesitate to include Hispanic patients in clinical interventions because of fears that cultural differences will interfere with treatment efficacy are encouraged to hire bilingual and bicultural staff to provide the intervention in a manner sensitive to the population of focus. In this manner, we may be able to decrease the disparities in healthcare delivered to racial and ethnic minorities in the United States.

Acknowledgements

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Hispanics (those speaking primarily Spanish) constitute the fastest growing ethnic minority in the US. From 1990 to 1997, the increase in the proportion of people over the age of 65 years in the US was five times greater among Hispanics than non-Hispanics.[1] Currently, Hispanics comprise 11.7% of the US population.[2] Cardiovascular disease is the leading cause of death for these individuals.[3,4] In older Hispanics, the incidence of heart failure (HF) equals that of older non-Hispanic Whites – 26 and 27%, respectively.[5] HF is the most common discharge diagnosis for Medicare beneficiaries[6] and hospitalization rates for HF are as high among Hispanics as non-Hispanics.[7]

Recent research has demonstrated that disease management (DM) programs can significantly reduce hospital admissions and acute care costs in patients with HF.[8-12] In these programs, patients with HF are taught to consistently follow diet and medication recommendations, monitor their symptoms routinely, and seek care for signs of deteriorating illness.[13-16] Telephonic case management is one method of DM that is commonly used for individuals with HF.

Despite recognition of the growing Hispanic population, data demonstrating the high incidence of HF in Hispanics, and the current enthusiasm for HF DM programs, no published reports of HF DM programs that included Hispanics were found in the literature. Therefore, the purpose of this study was to test the effectiveness of a standardized telephonic DM intervention in decreasing acute care resource use in Hispanics with HF. In this analysis, we sought to determine if the intervention was as effective in Hispanic and non-Hispanic individuals with HF. The primary outcome of interest was the number of HF hospitalizations.

Background

The literature on Hispanics with chronic illness is relatively sparse. What literature exists suggests that Hispanics may differ from non-Hispanics in their knowledge about chronic diseases and self-care practices.[17] The views of Hispanics on the relationship of mind and body in illness and symptom management may also differ from those of non-Hispanic individuals.[18] In one source, the authors note: 'The US biomedical model reflects values and cultural patterns of the US mainstream, often with an assumption that everyone shares the same model. Ethnic minorities do not necessarily subscribe to the values or tenets associated with the US medical system, such as dichotomization of mind and body, the belief that individuals can control their environment, and the value of taking responsibility for one's health.'[17] In one study of US Hispanics, African-Americans, and Filipino-Americans, knowledge about chronic illnesses was most variable among the Hispanics.[17] Their primary self-care practice was taking medication. Lifestyle modification in response to chronic illness was not seen as an essential part of self-care. Others have noted that some Hispanics believe that treatment adherence is self-indulgent[19] or that self-care can adversely affect recovery.[20]

Hispanics are hungry for correct and reliable health information provided in a culturally-competent fashion.[21] Cultural competence is defined as the use of a set of congruent behaviors, attitudes, and policies by a system, agency, or group of professionals that enables effective cross-cultural care.[22] Brach and Fraser[23] propose nine specific techniques for providing culturally competent care by changing clinician and patient behavior so that appropriate services are provided. These nine techniques are: interpretation services; recruitment and retention of minority staff; training in cultural competency; coordination with traditional healers; use of community health workers; culturally competent health promotion (which includes proper care of chronic diseases); inclusion of family and/or community members; immersion into another culture; and administrative and organizational accommodations such as clinic locations and hours of operation. In this study, we hired bilingual and bicultural staff to provide telephonic case management to both Hispanic and non-Hispanic individuals with HF. Many of these techniques were incorporated into the intervention.

The primary analysis of the effect of intervention versus usual care, regardless of primary language, demonstrated a significant overall effect of the case management intervention on HF hospitalization rates at 3 months (45.7% lower than the control group, p = 0.03) and 6 months (47.8% lower, p = 0 .009).[24] All-cause hospitalization rates were significantly lower in the intervention group at 6 months (28.2% lower, p = 0.03) as well. Other effects of the intervention evident after 6 months of intervention included 35.9% fewer HF readmissions (p = 0.04), 46.4% fewer days in the hospital for HF (p = 0.03), 45.5% lower acute care HF costs (p = 0.04), and 43% fewer multiple readmissions (p = 0.025) when compared with the control group.[24] There was no evidence of cost shifting to the out-patient setting. Patient satisfaction was significantly higher in the intervention group than in the usual care group (p = 0.01). The current study was a subgroup analysis of this main study.

Methods

A post-test only factorial experimental design was used to analyze data obtained in a randomized controlled clinical trial conducted at a large healthcare system in Southern California. In factorial designs, each level of a factor is combined with each level of the other factor(s) under consideration. A 'fully crossed'

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