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Attendance Patterns of Older Adults in a Health Promotion Program

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Synopsis

A group of 224 participants in a health promotion program for older adults had complete baseline data, including demographic information, self-perceived mental and physical health ratings, and measures of socialization and health limitations.

Participants were offered exercise sessions 3 times a week, weekly health education classes, and a weekly stress management group. Their attendance at these classes varied from no classes to approximately 750 classes. Initially, participants were divided into the following 5 subgroups: 90 with virtually no attendance, and approximately 30 in each of 4 quartiles of class attendance. The group with the lowest attendance (first quartile) was found to be statistically like the group whose participants never attended any classes; these groups were combined.

The Kruskal-Wallis One-Way Analysis of Variance was used to test for significant differences among the four groups on the variables of interest. In a comparison of the four groups from lowest to highest attendance, those participants with lowest attendance had lower incomes ($P < .05$), tended to live alone ($P < .01$), and were less likely to be able to climb two flights of stairs or walk a half-mile ($P < .01$) than those in greater attendance groups. Their socialization behaviors were poorer ($P < .01$), and their health often limited their activities ($P < .05$).

COMMUNITY-BASED SENIOR health promotion programs proliferated throughout the United States in the 1970s and 1980s (*1*) as a disease prevention-health maintenance strategy. In general, these programs were designed to help people modify unhealthy behaviors, increase use of screening tests and immunizations, and improve their overall knowledge of basic health (*2*).

Several studies have looked at relationships between psychosocial factors and level of exercise involvement (*3,4*). In particular, some research has indicated that older adults tend to participate in physical activities to satisfy needs for companionship and affiliation and to improve health status (*5-8*). Goal directedness was found to predict adherence to exercise programs among older adults (*9*). Social support and identification with others who are active were found to relate positively with exercise and adherence to exercise programs. Further, older adults perceiving themselves as physically able seem to be intrinsically motivated to engage in physical activity (*10*).

Various studies have focused on senior center participants and the relative importance of different variables in predicting center attendance. Sociodemographic variables have not been found to

predict center attendance consistently. Although women are overrepresented in senior center populations (*11*), attendance rates for men and women appear similar (*12–14*). Age seems to be unrelated to participation (*11,12*). Inconclusive findings have also been reported for race, marital status, education, and occupation, with some studies supporting differences and others reporting no differences (*12–18*).

Most of these studies have dealt with small samples from one senior center. None of them speak directly to the participant characteristics of older adults who enroll in and participate in formalized health promotion and disease prevention programs. Our purpose is to identify general and demographic factors thought to impact on the participation of older adults in health promotion interventions delivered by Project AGE WELL from 1985 to 1990.

Project AGE WELL

Project AGE WELL was a study initiated in 1985 to provide longitudinal data that would shed light on the changes in health status of older adults living in the community who participated in various health enhancement strategies for up to 5 years. The multidisciplinary project was free for persons older than age 60. Registration in the program continued from October 1985 until March 1989, allowing a minimum of 1 year participation for each person. Significant characteristics of the program included use of a variety of community sites such as senior centers, apartment houses, and congregate living areas; multiple risk factor interventions; long-term services and evaluation of individual health trends through annual reassessments; interdisciplinary team programs; and linkages with primary health care providers in the community (*19,20*).

Selection of risk factors on which to intervene was based on an initial survey at each site. Common targeted areas for risk reduction included health care maintenance, cardiovascular health, cancer prevention and control, osteoporosis and fracture prevention, mental wellness, and medication awareness. The interdisciplinary team included a family practice geriatrician, geriatric nurse practitioners, a nurse, a clinical pharmacist, a registered dietitian, an exercise physiologist, a counselor, and a medical social worker.

Interventions. The three basic interventions throughout the course of the project consisted of exercise sessions three times a week, a weekly health education series addressing the targeted risk factors and a variety of health topics, and a weekly stress management or support group. When necessary, ad hoc interventions were offered on medication management, weight control, or nutrition.

Participants. A total of 224 persons who had completed an initial screening evaluation participated in the study. Participation was measured by attendance at each of the hour-long activities—exercise sessions, stress management or support groups, and health education classes. A measure of total participation represented the sum of attendance in all class activities. The measure of total participation is clearly weighed in favor of exercise, since participation in support and education classes could occur only once each week, while exercise classes were offered three times a week.

Participants fell into several distinct groups. One group submitted to all the paper tests and checkups but took few or no classes. Another group took classes but rarely participated in the regular checkups and paper tests. Some people participated in both, and some people submitted to only one particular baseline intake and did not participate in activities after that. The 224 ranged in activity from attendance at no classes to attendance at approximately 750 classes. Because not every member of the group entered the program at the same time, neither total class participation nor time in the program seemed to be the appropriate variable to distinguish among the groups. The ratio of the number of classes attended to the length of time in the program denoted the intensity of each person's participation.

People who took fewer than 6 classes in a year, or less than 20 classes total were put into Group 0. The rest were divided into quartiles, with the lowest intensity levels in Group 1 and the highest in Group 4. In this way, low and high intensity groups (Groups 1 and 4) could be compared without the danger of confounding due to crossover between groups. This effect could result when participants with borderline intensity are misclassified into the next higher or lower group. The first quartile group had intensity ratios of 0 to 0.06, second quartile 0.06+ to 0.13, third quartile 0.13+ to 0.25, and fourth quartlle 0.25+ and higher, with the highest ratio being 0.76.

Data collection. Variables that could influence level of participation were chosen in an attempt to identify attendance patterns. These included age, socio-

Table 1. Kruskal-Wallis one-way analysis of variance of targeted variables across four intensity groups, AGE WELL Study, Tucson, AZ, 1985–89

Variable	Number	Chi-square[1]	Significance
Age at assessment[2]	215	1.25(F)	NS
Socioeconomic level	204	7.87	.05
Education level	214	1.49	NS
Number of chronic conditions	207	1.81	NS
Number of prescribed medications	191	2.48	NS
Live alone	215	30.25	.01
Self-perceived mental health	212	0.73	NS
Self-perceived physical health	214	2.94	NS
Social risk[2]	176	4.93(F)	.01
Previous group activity	214	5.84	NS
Satisfaction with life	215	5.52	NS
Health limitations	213	7.97	.05
Ability to walk 1/2 mile	207	14.14	.01
Ability to climb 2 flights of stairs	206	11.86	.01

[1] Corrected for ties.
[2] Parametric analysis of variance.
NOTE: NS = Not significant.

economic status, education level, number of chronic conditions, number of prescription medications, household status, self-perceived mental and physical health, social risk, previous group activity, satisfaction with life, health limitations, ability to walk a half mile, and ability to climb two flights of stairs.

Instruments. The AGE WELL questionnaire used during the initial screening evaluation included basic demographic information and a number of subscales. The subscale "social risk" consisted of eight components that reflected a person's sense of isolation from or integration into society. These components were trust, isolation, talking with people on the telephone, visiting, feeling lonely, outside care if needed, importance of spiritual values, and number of friends. Scores ranged from 10 to 42, with higher scores associated with greater risk. The questions, adapted from the Older Americans Research and Services assessment instrument (*21*), had a standardized item alpha reliabilIty of 0.54.

Previous group activity was measured by the number of groups a person attended monthly. Self-perceived mental and physical health, satisfaction with life, health limitations, ability to walk a half mile or climb two flights of stairs were single questions designed to assess quickly a participant's self-expectation of physical abilities and well-being.

Data analysis. Groups 0 and 1 were first compared to see if they were statistically alike and could be combined. Because the data are ordinal in nature and the observations are not necessarily from normally distributed populations, the Mann-Whitney U Test was used to test for significant differences between the rank sums of the two distributions. A correction was made for ties. The test showed no significant differences between these two groups on any of the variables, so they were combined. Regression analysis and multivariate statistics were not used because of the ordinal nature of the data and the unknown population distribution.

A Kruskal-Wallis One-Way Analysis of Variance was used to test for significant differences on the targeted variables among the four groups based on intensity of participation. Like the Mann-Whitney U test, the Kruskal-Wallis test does not make assumptions about the distribution of the data. It is a test of significant differences among the average ranks for each group under the hypothesis that the four groups have the same distribution. Differences among the groups on social risk and age at assessment were examined by standard analysis of variance procedures, since the data were interval in nature. Normal probability plots showed the data were basically normally distributed.

Results

Results of the analysis of variance tests are summarized in table 1. The four groups differed significantly on these six variables: health limitations, socioeconomic level ($P<.05$), ability to walk a half mile, ability to climb two flights of stairs, living alone, and social risk ($P<.01$).

Further comparisons were made between groups 1 and 4 for the six variables. The comparisons and order of treatment effects were specified beforehand (*a priori* tests), since intensity of participation was expected to be associated negatively with poorer social integration and health. The results of the Mann Whitney U test appear in table 2. (A t-test was used for social risk.)

Of the six variables, only socioeconomic level did not seem to be significantly different between the high and low intensity-level participants. The five other variables (living alone, social risk, health limitations, ability to walk a half mile, ability to climb two flights of stairs) retained significance, with the lesser risk attributed to the more active participants, as expected. We also looked at differences between senior center and low-income housing participants. The nature of these populations are somewhat different in that participants attending senior centers must be able to travel to the center, whereas the participants in low-income

Table 2. Mean ranks for targeted variables and their significance[1] for Group 1[2] and Group 4[3], AGE WELL Study, Tucson, AZ, 1985–89

Variable	Group 1		Group 4		P value[1]
	Mean rank	Number	Mean rank	Number	
Socioeconomic level	70.83	116	79.41	28	NS
Live alone	82.39	124	57.30	30	.01
Social risk	18.8	93	17.1	28	.05 (t-test)
Health limitations	81.02	122	58.10	30	.01
Ability to walk half mile	77.93	118	58.00	29	.01
Ability to climb 2 flights of stairs	78.42	118	56.03	29	.01

[1] Tests for significance were made using the Mann-Whitney U Test (same as the Wilcoxen Rank Sum Test). Corrections were made for ties.
[2] A group of 126 low attendees (intensity less than 0.06) that includes nonattenders and first quartile participants.
[3] A group of 30 high attendees (intensity greater than 0.25).
NS = Not significant.

Table 3. Mean ranks for targeted variables and their significance[1] for Group 1[2] and Group 4[3] of senior citizen center participants only, AGE WELL Study, Tucson, AZ, 1985–89

Variable	Group 1		Group 4		P value[1]
	Mean rank	Number	Mean rank	Number	
Live alone	52.30	71	42.15	27	NS
Social risk	18.1	56	16.5	25	NS (t-test)
Health limitations	52.57	69	38.09	27	.05
Ability to walk half mile	50.45	69	41.50	26	.05
Ability to climb 2 flights of stairs	51.90	68	36.00	26	.01

[1] Tests for significance were made using the Mann-Whitney U Test, which is the same as the Wilcoxen Rank Sum Test. Corrections were made for ties.
[2] Group 1 includes 126 no attenders and first quartile participants who are low attendees (intensity less than 0.06).
[3] Group 4 includes 30 high attendees (intensity greater than 0.25).
NS = Not significant.

housing live at the program site. This difference may be reflected in the health limitations and the motivation levels of the participants. Of the 224 persons with complete baseline data, 153 were from senior centers and 71 lived in low-income housing. A comparison was made between participants from the senior centers and from low-income housing on the targeted variables to see if they were statistically alike.

The participants attending senior citizen centers were significantly different at $P < .01$ with respect to age (lower), social risk (less), previous group activity (more), income (higher), living alone (less likely), ability to walk a half mile (better), number of prescription medications (fewer), and at $P < .05$ with respect to education (higher), and health limitations (fewer). Because the means of many targeted variables were significantly different between participants at senior centers and those from low-income housing, the attendance patterns of these two subgroups were examined separately.

A Kruskal-Wallis analysis of variance showed the four low-income housing groups to be significantly different only on the variable, living alone, with $P = .0495$. Because one significant difference could easily arise by chance from the numerous statistical tests, the small sample sizes, and the borderline P value, the low-income housing group was not considered significantly different across the four intensity groups. Therefore, no further analyses were made on the low-income housing group in this study.

For those from the senior centers, however, the four groups differed significantly on ability to walk half a mile ($P < .05$), ability to climb two flights of stairs, and living alone ($P < .01$). Borderline P values of .053 were found for social risk and .056 for health limitations.

Groups 1 and 4 were then compared (*a priori* tests) on five variables, using the Mann-Whitney U test. Social risk and living alone were not found to be significant, but health limitations and ability to walk half a mile were significant at $P = .05$ and ability to climb two flights of stairs was significant at $P = .01$, with the lesser abilities being associated with the lowest level of participation (table 3).

Discussion

Intensity of participation was significantly related to the socialization and health of all participants. For participants from low-income housing sites,

there were no significant differences on the targeted variables with intensity of participation. For senior center participants, however, lower intensity of participation was associated with less ability to walk a half mile, climb two flights, or with health limitations. On the other hand, intensity of participation for senior center participants did not seem to be a function of their risk of social isolation.

Some of the significant differences between the high- and low-level attendees of the total group were lost when the targeted variables were compared within the more homogenous groups (senior center participants and low-income housing participants). Attendance by senior center participants was significantly affected by health conditions only, and not by social risk or living alone. About half (49 percent) of the senior center participants were low attendees, and about 18 percent were high attendees. About 77 percent of those at low-income housing were low-attendees and about 5 percent were high attendees.

It is apparent that some of the variance attributing to significant differences between high and low attendees could be accounted for by the site variable. These "site differences" probably capitalized on the greater physical mobility, lesser health limitations, and greater motivation for those who had to travel to the site for health promotion services. Even for the group traveling for services, however, the most significant impediments to active participation were inability to walk half a mile or climb two flights of stairs, and general health limitations. Those who had to travel to attend services but did not, such as senior center participants, did not necessarily live alone, were not necessarily poor nor at social risk. People who became active in our health promotion program, whether or not they had to travel to it, however, were less likely to live alone and be at social risk.

Social isolation, poor exercise tolerance, and health problems were characteristics of persons least likely to attend classes in this community-based program. Older persons with this profile, however, are most in need of health promotion interventions. This trial suggests that innovative recruitment and retention strategies are necessary to deliver community-based preventive services to those older adults in greatest need.

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