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## The Decisional Balance Sheet to Promote Healthy Behavior Among Ethnically Diverse Older Adults

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### Abstract

**Objective**—The rising health care costs and increasing older adult population in the United States make preventive medicine for this age group especially crucial. Regular physical activity and fruit and vegetable consumption may prevent or delay the onset of many chronic conditions that are common among older adults. The decisional balance sheet is a promotional tool targeting the perceived pros and cons of behavior adoption. The current study tested the efficiency and effectiveness of a single-day decisional balance sheet program, targeting increased physical activity and fruit and vegetable intake among older adults.

**Design and Sample**—Participating adults ( $N = 21$ , age = 72.2) who represented a diverse population in Hawaii (Japanese = 5, Filipino = 4, Caucasian = 4, Native American = 1, Native Hawaiian = 1, Hispanic = 1, and Others = 5) were recruited from housing communities and randomized to a decisional balance sheet program adapted for physical activity or fruit and vegetable consumption.

**Measures**—Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ) short form, and daily fruit and vegetable intake with the National Health and Nutrition Examination Survey single item instrument. Baseline and follow-up data were collected.

**Results**—Both programs were implemented efficiently, and participants in both groups improved their daily physical activity. The decisional balance sheet for fruit and vegetable consumption appeared less effective.

**Conclusions**—Specific suggestions for similar programs are reported.

### Keywords

community living; geriatric nursing; nutrition; physical activity

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By the year 2030, one of five Americans will be at least 65 years old (Balfour et al., 2009). Reports indicate that approximately 78% of U.S. health care dollars are spent on chronic disease, and these expenses rise dramatically as people develop multiple conditions (Anderson & Horvath, 2004). Given that 85% of older adults have at least one chronic

condition and 62% have multiple chronic conditions (Anderson & Horvath, 2004), the increasing older adult population could add considerable strain to the U.S. health care system. To avert these future costs, it will be critical for all health stakeholders to engage in proactive approaches to prevent these conditions.

Two behaviors associated with the decreased risk of chronic disease are regular physical activity and daily fruit and vegetable consumption. Regular physical activity among older adults is associated with reduced risk of cardiovascular disease, thromboembolic stroke, hypertension, type 2 diabetes mellitus, osteoporosis, obesity, colon cancer, breast cancer, anxiety, and depression (Haskell et al., 2007). Furthermore, an epidemiological review reported fruit and vegetable consumption protective against numerous cancers, coronary heart disease, stroke, and cataract formation (Van Duyn & Pivonka, 2000). Although older adults commonly suffer from hypertension, heart disease, arthritis, eye disorders, and diabetes (Anderson & Horvath, 2004), they are the least physically active of all age groups (CDC, 2003) and many believe there is no point in improving their diet (Resnick & Daly, 1998).

From the years 2000 to 2030, the demand for older adult living communities is projected to double (Bernstein & Edwards, 2008). Despite the convenience of these localized settings, previous promotional efforts report difficulty in motivating older adults (Mihalko & Wickley, 2003). Less success among older adults may result from their passive approach to health care (Bastiaens, Van Royen, Pavlic, Raposo, & Baker, 2007), their multiple medical needs (Haber, 1994), and/or limited physician time devoted to preventive health (Fried & Guralnik, 1997; Langford, 2004; Thorpe & Howard, 2006). Previous reports suggest simple and minimally intense health promotion programs that aim to inform and empower older adult participants, rather than overwhelm them (Fox, Breuer, & Wright, 1997; Hochhalter, Song, Rush, Sklar, & Stevens, 2010; Tennstedt, 2000). One theory-based health promotional tool fitting this description is the decisional balance sheet.

Decisional balance is a measure of attitude that captures how individuals weigh the consequences of a specific behavior in terms of pros and cons (Prochaska, Redding, & Evers, 1996). The decisional balance sheet program provides basic health knowledge and empowers individuals to take personal control over their own health (Janis & Mann, 1977). Specifically, participants discuss and record their perceived gains and losses associated with behavior adoption. This approach has been successful in the promotion of cancer screening among Chinese women (> 50 years) (Strong & Liang, 2009) and diabetes screening among middle-aged adults (40–69 years) (Kellar et al., 2008); however, there is minimal to no report on programs designed to promote older adults' physical activity and/or fruit and vegetable consumption. The current study tested the implementation of a decisional balance sheet physical activity program and fruit and vegetable program; specifically describing the efficiency and effectiveness of programs adapted for older adults residing in community living homes.

## Methods

### Design and sample

Older adults were recruited from two community housing sites in Hawaii. Following informed consent, participants completed a 10-min health behavior survey and were randomly assigned to either the physical activity program or the fruit and vegetable program. Approximately 2 weeks later, participants completed a follow-up health behavior survey, and received a \$10 grocery store gift card for their participation. All procedures were approved by the University Institutional Review Board.

## Intervention

**Decisional balance sheet program**—Apart from targeting different health behaviors, the physical activity and fruit and vegetable decisional balance programs were identical. The single-day program began with introductions, which was followed by a group discussion on the gains and losses associated with behavior adoption; participants were encouraged to share personal expectations throughout. Participants were then guided through completion of their own decisional balance sheet (see Fig. 1), recording the consequences of adopting the targeted behavior in terms of *gains*, *losses*, *approvals*, and *disapprovals*. As observed, the sheet includes a column labeled *self* and *others*; thus, participants were asked to consider both the personal and social consequences of increasing their physical activity or fruit and vegetable intake.

## Measures

Participants self-reported their gender, age, race/ethnicity, marital status, and height/weight. Physical activity was assessed using the International Physical Activity Questionnaire (IPAQ) short form, which has been validated across diverse populations and settings (Craig et al., 2003). Daily fruit and vegetable intake was assessed with the National Health and Nutrition Examination Survey single item instrument (NCHS, 2007), which has been validated extensively (Prochaska & Sallis, 2004; Resnicow et al., 2000).

## Analytic strategy

Due to the small sample size and preliminary nature of this program evaluation, results are presented descriptively. The within and between group pre- to postintervention, change in average daily physical activity minutes, and fruit and vegetable servings are presented by intervention group.

## Results

### Participant demographics

Participants with complete assessment data at pre- and postintervention ( $N = 21$ ) had a mean age of 72.24 years (standard deviation [ $SD$ ] = 11.84) and a mean body mass index (BMI;  $\text{weight/height}^2 \times 703$ ) of 26.14 ( $SD = 6.57$ ). Seventy-six percent of participants were women, 80% were high school graduates, 95% were either single or widowed, and 71% self-reported their health as good to excellent. Participants represented an ethnically diverse population in Hawaii (Japanese = 5, Filipino = 4, Caucasian = 4, Native American = 1, Native Hawaiian = 1, Hispanic = 1, and Others = 5).

### Program efficiency

The brief decisional balance sheet program demonstrated high feasibility and efficiency. The localized population and organized structure of the environment provided easy implementation of the single-day program. Although there was some dropout, 71% of physical activity group participants, and 53% of fruit and vegetable participants attended both the baseline and follow-up meetings. The program required minimal staff involvement ( $\approx 30$ – $40$  min) and included minimal paper costs ( $\$0.05$  [one decisional balance sheet]  $\times 21$  participants =  $\$1.05$ ).

### Program effectiveness

The average daily physical activity and fruit and vegetable servings at pre- and postintervention and mean change (i.e., postintervention-baseline) are presented in Table 1 by the decisional balance sheet program received. Both groups improved their moderate physical activity minutes, with the fruit and vegetable program participants demonstrating a

greater mean increase (15.19 more minutes). Alternatively, compared with their counterparts, physical activity program participants reported a greater increase in their daily fruit and vegetable intake (1.01 more servings). However, the higher servings consumed by fruit and vegetable participants relative to physical activity participants at both assessment points is noteworthy.

## Discussion

Within the next 20 years, the U.S. population will become much older, and projections estimate a dramatic rise in chronic conditions. Although aging is inevitable, the onset of chronic disease among older adults can be prevented. The current study evaluated two decisional balance sheet programs that targeted the health behavior of older adults residing in a community housing environment. Implementation procedures and results indicated that the brief program is an efficient and effective tool for promoting healthy behavior among older adults. Study outcomes are discussed below with suggestions for future application.

Relative to efficiency, the single-day decisional balance sheet program to promote physical activity and fruit and vegetable intake was implemented successfully. Being inclusive to older adults, the community-living setting proved highly functional for program implementation. The decisional balance sheet program was characteristically ideal, providing individually tailored motivation with minimal staff training and low participant demand. Housing communities for older adults are under increasing demand, generating increased opportunities for health promotion programs with excellent reach and simplified dissemination. Similar health promotion programs and evaluations within these type of settings are encouraged.

The decisional balance sheet program appeared effective for physical activity promotion, but potentially less applicable for increasing older adults' fruit and vegetable intake. It may be that the perceived benefits of fruit and vegetables are not substantial enough to motivate increased intake among older adults, which would parallel previous evidence (Resnick & Daly, 1998). It is also important to recognize the high fruit and vegetable consumption at baseline, which left little room for improvement among fruit and vegetable participants. Finally, certain environmental factors are likely to impact program effectiveness (e.g., accessibility to physical activity/nutrition opportunities). Research identifying the specific characteristics of adult housing communities that are most salient to program success is warranted.

Noteworthy is the untargeted increase in physical activity among fruit and vegetable participants, which is a phenomenon that has been well documented in previous intervention research (Berrigan, Dodd, Troiano, Krebs-Smith, & Barbash, 2003; Fine, Philogene, Grambling, Coups, & Sinha, 2004; Johnson et al., 2008). For example, a recent randomized controlled trial found that individuals who adopted one healthy behavior were up to five-times more likely to adopt an additional healthy behavior (Johnson et al., 2008). Prospective studies report considerable benefits of multiple health behavior adoption, estimating an approximate 70% reduction in chronic disease (Ford et al., 2009) and significantly improved quality of life (Harrington et al., 2010). Given such potential and older adults' exaggerated concern for their personal health (Cox, Miller, & Mull, 1987; Fox et al., 1997), the success of multiple health behavior promotion among older adult populations is a valuable avenue for future research.

The prevalence of older adult housing communities is expected to rise dramatically over the next 20 years, generating excellent reach to the older adult population. Given this rising opportunity, evidence to inform efficient and effective promotional strategies that tailor to these contexts is warranted. The current decisional balance sheet program successfully

promoted physical activity at low cost and with minimal staff involvement; hence, current practitioners are encouraged to implement the decisional balance sheet in similar settings. The current small and highly diverse sample did not allow examination of potential factors moderating the impact of the intervention (e.g., ethnicity, age); however, the large ethnic representation provides groundwork for future studies to build on, as well as practical information for nurse practitioners working among similar populations.

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	SELF	OTHERS
GAIN		
LOSS		
APPROVAL		
DISAPPROVAL		

**Figure 1.**  
Decisional Balance Sheet (Adapted from Janis & Mann, 1977)

TABLE 1

## Daily Moderate Physical Activity and Fruit and Vegetable Consumption

Program	N	Behavior	Baseline mean (SD)	Follow-up mean (SD)	Mean change <sup>a</sup>
Physical activity	12	PA minutes	18.76 (22.62)	50.95 (54.51)	+32.19
		FV servings	3.52 (3.42)	3.79 (1.93)	+0.27
Fruit and vegetable	9	PA minutes	3.33 (10.00)	50.38 (84.30)	+47.38
		FV servings	5.63 (3.25)	4.89 (1.83)	30.74

PA = physical activity; FV = fruit and vegetable; SD = standard deviation.

<sup>a</sup>Mean change = (follow-up mean – baseline mean).