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Adherence

What matters to patients with heart failure? The influence of non-health-related goals on patient adherence to self-care management

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ABSTRACT

Objective: To describe the life goals of heart failure (HF) patients and to determine whether adherence is influenced by the extent to which these priorities are perceived as compatible with HF self-care regimens.
Method: Forty HF outpatients identified their top-five life goals and indicated the compatibility of HF self-care regimens (diet, exercise, weighing) with these priorities. HF knowledge, self-efficacy and reported adherence were also assessed.
Results: Patients valued autonomy and social relationships as much as physical health. However, the rated importance of these domains did not predict adherence. Adherence positively correlated with the extent to which the regimen, specifically exercise, was considered compatible with life goals ($r = .34$, $p < .05$). Exercise adherence also correlated with illness severity and self-efficacy ($rs = -.42$ and .36, $p < .05$, respectively). The perceived compatibility of physical activity with personal goals predicted **11%** of the variance in exercise adherence above and beyond that accounted for by illness severity and self-efficacy ($F\Delta$ (1, 36) = 7.11, $p < .05$).
Conclusions: Patients' goals outside of the illness management context influence self-care practices.
Practice implications: Exploring patients' broad life goals may increase opportunities to resolve ambivalence and enhance motivation for self-care adherence.

1. Introduction

Ineffective self-care among patients with heart failure (HF) is the leading cause of frequent hospital readmissions, high morbidity and mortality rates, as well as costly health expenditures [1–5]. The term '*self-care*' refers to patient-initiated practices that help maintain and optimize physical wellbeing [6,7]. HF practice guidelines in the US [8] and Europe [9] stipulate that patients should engage in the following self-care behaviors: (1) restricting salt and fluid intake, (2) daily weighing, and (3) balancing physical activity with rest. However, a recent study [10] of HF patients across 15 countries indicated that 50–80% of individuals never or rarely adhere to these recommendations. Given that self-care is central to the successful management of HF [4], it is crucial to elucidate factors that underlie patient non-compliance [11].

Health behavior models are commonly used to explain patient adherence [12]. These models include the Health Belief Model (HBM) [13–15], the Common Sense Model of Self-Regulation (CSM; [16,17]) and the Theory of Planned Behavior/Theory of Reasoned Actions (TPB/TRA; [18]). Although each theory differs somewhat in the construal and labeling of constructs, all models underscore the importance of patient knowledge and self-efficacy for health behavior [12]. A recurrent finding in the HF literature is that adherence is not solely driven by these cognitive factors [19–21, 54]. That is, several qualitative studies suggest that HF patients' decisions to follow self-care recommendations are driven by whether they *value* the prescribed behavior and perceive it to be an

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integral part of their lives [21–26]. For example, one study found that among patients with similar knowledge of self-care recommendations, those who prioritized HF management above other life events (e.g., a job transition) were more proficient at self-care [22].

Despite the evidence that assessing patient goals and values can advance the understanding of HF self-care adherence, few studies have examined this process. The main exceptions are interventions that incorporate motivational interviewing (MI) strategies, which direct patients' awareness to the discrepancies between their current actions and desired goals [27]. Yet, the impact of MI on self-care adherence has been suboptimal [28–30], arguably because MI programs advocate for HF-related goals (e.g., undertaking physical activity) that are not necessarily important to some patients. As a case in point, a qualitative study found that patients have difficulty prioritizing HF management when they have to attend to other pressing matters, such as taking care of a sick spouse [31]. It is possible that capitalizing on a broad range of patient life-goals and charting their compatibility and incompatibility with self-care regimens may be more conducive to understanding health behavior change.

The phenomenon whereby one goal interferes with the achievement of another is termed *goal incompatibility* [33]. In non-HF populations, it has been shown that conflicts between personal and exercise goals predict non-compliance with a physical activity regimen [33–35]. For example, one study [36] asked undergraduate students to list goals for school, home, community or leisure, and rate the extent to which these goals facilitated or conflicted with physical activity. The perceived compatibility of exercise with personal goals predicted physical activity above and beyond self-efficacy and behavioral intention. This suggests that the motivation to perform a health behavior is driven not only by the commitment to a single health goal but also by the interrelations between multiple goals from different life domains.

Examining the dynamic process between competing goals may help to operationalize the construct of motivation in health behavior theories [37], and also serve as a useful clinical approach. To date, no quantitative research has examined whether patients' competing life priorities influence their self-care practice or whether goal compatibility has a similar degree of impact on adherence as other known predictors of self-care in health behavior frameworks, namely, knowledge and self-efficacy.

As such, the overall aim of the current study was to enhance the understanding of patient motivation for self-care through the examination of their goals. The first objective was to gauge the importance patients accorded to managing HF relative to priorities in other life domains. The second objective was to determine whether the perceived incompatibility of HF self-management with non-health-related goals predicted adherence above and beyond the explanatory power of knowledge and self-efficacy.

2. Methods

2.1. Participants

Participants were HF patients who received their care from a hospital outpatient heart failure clinic in London, Ontario, Canada. Patients were invited to participate in the study during their scheduled appointment with a HF specialist. Inclusion criteria were: (1) the ability to speak and read English; (2) adequate mental status (as gauged by the attending physician); (3) mild to moderate HF symptoms as identified by the New York Heart Association functional (NYHA) Class II and III guidelines [38]; and (4) HF as the primary diagnosis. Patients with NYHA Class I were excluded because self-care management is not typically part of the treatment regimen for those who are asymptomatic. Given the limited evidence that suggests that physical activity benefits NYHA IV patients [39–41], it would be unlikely that such individuals would have been prescribed all three self-care recommendations (exercise, diet and daily weighing) under investigation. Accordingly, NYHA IV patients were excluded. The study protocol was approved by the Health Sciences Research Ethics Board at the University of Western Ontario and the Lawson Health Research Institute at the London Health Sciences Centre.

2.2. Measures

2.2.1. Self-care adherence

The Self-Care of Heart Failure Index (SCHFI V6.2) [42,43] management (6 items) and maintenance (10 items) subscales are validated instruments that assess overall patient compliance across a range of therapeutic and symptom monitoring behaviors. As per previous research on individual self-care behaviors [10], this study used the scores of separate items on the SCHFI to measure adherence to specific lifestyle regimens. Seven of the original 16 SCHFI items (Table 1) were used to gauge adherence to salt and fluid restriction (4 items), physical activity (2 items), and daily weighing (1 item). Medication compliance and items pertaining to behavioral recommendations that were not applicable to all patients in the sample (e.g., immunization and calling the doctor's office) were excluded. Each item was rated on a 1 (never or rarely/not likely) to 4 (almost daily/very likely) point Likert-type scale. The total raw scores for each of the three self-care behaviors were standardized so that the range was 0–100, with a higher score indicating better adherence to that aspect of the regimen. See Table 1 for descriptive statistics.

2.2.2. HF knowledge

Knowledge about HF and how to apply that knowledge were assessed by the Dutch Heart Failure Knowledge Scale (DHFKS) [44] and the Knowledge Acquisition Questionnaire (KAQ) [45], respectively. Descriptive statistics are presented in Table 1.

The 15-item multiple-choice-based Dutch Heart Failure Knowledge Scale (DHFKS) [44] is a reliable and well-validated measure [46] that measures general knowledge about the causes of HF, HF symptoms and self-care recommendations. The score (0–15) is based on the number of correct responses, with higher scores indicating better levels of didactic HF knowledge. The 8-item multiple-choice KAQ, shown to be internally consistent (α = .61–.66) [45], assesses the extent to which patients can apply HF information. For example, one item requires respondents to identify foods that are high in salt from a given list. Scores (0–8) based on the number of items answered correctly reflect the ability to apply HF knowledge.

2.2.3. Self-efficacy

Perceived ability to perform self-care behaviors was assessed using the 6-item Confidence subscale from the SCHFI [42,43]. Participants rated items on a 4-point scale, ranging from 1 (Not Confident) to 4 (Extremely Confident). The total raw scores were standardized to range from 0 to 100 by subtracting 6 from the sum and multiplying by 5.56. Higher scores indicated higher self-efficacy. See Table 1 for descriptive statistics.

2.2.4. Prioritized goals

Participants identified their top-5 goals through a modified version of the Personal Value Card Sorting Task [47]. The adapted card items were culled from qualitative interviews highlighting HF patient experiences [21–26,31,48–52] and were generated to reflect the four basic value domains (i.e., openness to change, self-transcendence, self-enhancement, conservation) detailed in

Table 1
Descriptive statistics for self-report measures.

Variable	# of Items	*M* (*SD*)	Possible range	Observed range	α
Self-care adherence					
SCHFI diet i. How routinely do you eat a low salt diet? ii. How routinely do you ask for low salt items when eating out or visiting others? iii. How likely are you to reduce the salt in your diet? iv. How likely are you to reduce fluid intake?	4	55.1 (25.2)	0–100	0–100	.67
SCHFI weighing i. How routinely do you weigh yourself?	1	51.3 (29.6)	0–100	0–100	n/a
SCHFI physical activity i. How routinely do you do some physical activity? ii. How routinely do you exercise for 30 min?	2	55.0 (31.6)	0–100	16.7–100	.88
Goal compatibility					
Diet restriction	6	14.4 (2.9)	0–20	9.0–20	.78
Weighing	6	12.6 (3.5)	0–20	7.4–20	.91
Physical activity	6	13.5 (4.5)	0–20	5.5–20	.89
Self-efficacy					
SCHFI confidence	6	62.4 (17.4)	0–100	33.4–100	.84
Knowledge					
DHFKS	15	11.4 (2.23)	0–15	6–14	.57
KAQ	6	9.76 (1.71)	0–14	6–12.5	.36

Note: α = alpha; *M* = mean; *SD* = standard deviation; SCHFI = Self-Care Heart Failure Index; DHFKS = Dutch Heart Failure Knowledge Scale; KAQ = Knowledge Acquisition Questionnaire.

Schwartz's Theory of Integrated Value Systems [53]. A fifth value domain was added to specifically gauge patient goals regarding HF self-care. An expert panel of a cardiologist and psychologists ($N = 4$) refined the final set of 20 goal cards (see Table 2). Participants were asked to sort each of the 20 goal cards into three piles: "Very Important", "Somewhat Important" and "Less Important". They were then asked to select the top-5 goals from the "Very Important" pile and rank order them. Each of the 20 goals was assigned a score of 0 (not chosen as a top-5 goal) or from 1 (ranked fifth of five) to 5 (ranked first of five). The mean ranking score for each goal domain was calculated by averaging the goals, with a higher score indicating that the domain was more highly valued.

2.2.5. Goal compatibility and incompatibility

The Competing Goals Task (Fig. 1) required participants to move a tab along a −10 (Not at all Compatible) to +10 (Very Compatible) horizontal scale to indicate the degree to which they judged a self-care regimen facilitated or impeded achievement of a top-5 goal. At the onset of each trial, a card listing one of the participant's top-5 goals was placed adjacent to the +10 anchor. One of the three cards listing a self-care behavior (daily weighing, limiting sodium/fluids, and following recommended levels of physical activity) was attached to the slide. Participants were asked to indicate the compatibility of a given self-care behavior to a top-5 goal by moving the tab to the desired point along the horizontal scale. The presentation of the top-5 goal and self-care behavior cards was randomized and a total of 15 trials (3 self-care behaviors × 5 goal cards) were completed for each participant. The use of visual analogs to measure goal compatibility was closely modeled after a previous study of the same construct [36].

Mean goal compatibility scores for each type of self-care behavior were computed by adding a value of 10 to each numerical rating, summing the scores and then dividing the values by 5. The possible range of compatibility scores for each self-care behavior ranged from 0 (Not at all Compatible) to 20 (Very Compatible).

2.3. Data analysis

Statistical analyses were carried out using PSAW 19.0 software package (IBM, Chicago, USA). Participant characteristics and goal priority rankings were described using univariate statistics. A

Table 2
Percentage of participants rating a goal as 'top-5' and 'first' priority.

Goal items	Top 5 (%)	First (%)
HF symptom-relief		
1. To have enough energy to do the things I need/want to do	52.5	10.0
2. To get a good night's sleep	15.0	0.0
3. To be able to breathe easily	27.5	15.0
4. To avoid having dry mouth	0.0	0.0
Physical wellbeing		
5. To stay out of the hospital	30.0	5.0
6. To manage my illnesses other than heart failure	22.5	5.0
7. To live a long life	27.5	10.0
Social relationships		
8. To avoid being a burden to my family and loved ones	35.0	2.5
9. To take care of my family and loved ones	32.5	12.5
10. To spend quality time with family and loved ones	47.5	10.0
11. To be an active member of my community	5.0	0.0
12. To be accepted by family and friends	7.5	0.0
Autonomy		
13. To be able to work (inside and outside the home)	15.00	0.0
14. To have control over how I live my life	42.50	12.5
15. To maintain my physical independence	55.00	10.0
16. To be able to afford the costs of running my household	20.00	5.0
Hedonism		
17. To feel good about my self	20.00	0.0
18. To have a peace of mind	20.00	2.5
19. To eat the foods I like	5.00	0.0
20. To enjoy myself and have fun	20.00	0.0

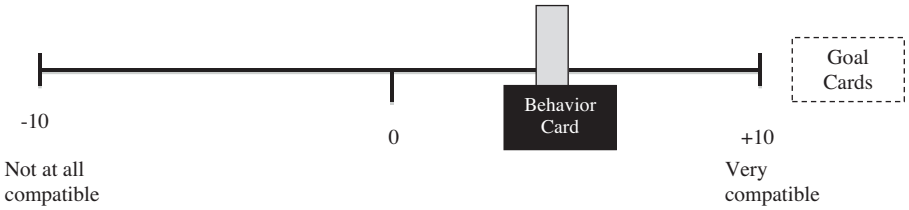

Fig. 1. Goal compatibility task.

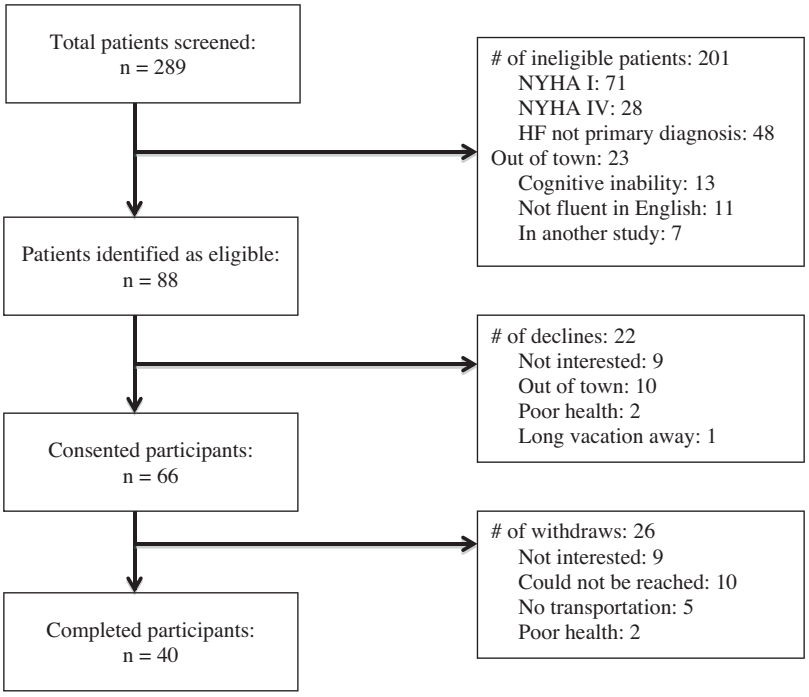

Fig. 2. Flow chart outlining the recruitment and enrollment process.

repeated measures Analysis of Variance (ANOVA) was used to examine whether certain goal domains were valued more than others. Pearson product–moment correlation coefficient was used to gauge the relationships among the demographic variables, predictors of adherence, goal domain scores and patient self-care behaviors. If goal compatibility was associated with compliance to any one of the three self-care regimens, a hierarchical linear regression was conducted to determine whether goal compatibility accounted for variance in adherence to that aspect of the regimen above and beyond other predictors. Estimation of the sample size was informed by previous studies on HF self-care adherence [56–58]. A power analysis based on a desired power (beta) of .80, medium effect size (f^2) of .15, and significance level (alpha) of .05 indicated that a sample size of 40 would be appropriate.

3. Results

3.1. Participant characteristics

Of the 289 patients screened at the clinic, 88 met the inclusion criteria and 40 (77.0% male; *M* age = 66.2; *SD* = 10.0) participated in the study (see Fig. 2). Sample characteristics are presented in Table 3. The majority of the sample met the criteria for NYHA Class II HF (65.0%) and reported being diagnosed with a comorbid disease (70.0%). On average, participants had lived with HF for 5.7 (*SD* = 3.9) years, were highly educated (mean years = 13.4, *SD* = 3.8) and were unemployed due to HF (24.3%) or retirement (54.0%).

Table 3
Participant demographic characteristics.

Variable	
	M (SD)
Age	66.22 (10.01)
Years since HF diagnosis	5.72 (3.96)
Years of education	13.38 (3.82)
	(%)
White	97.5
Male gender	78.5
NYHA II	65
Comorbid illness	70
Relationship status	
Legally married	65.0
Separated/divorced	15.0
Common-law	7.5
Single	5.0
Widowed	7.5
Household income	
<$20,000	12.5
$20,000–$40,000	35.0
$41,000–$60,000	22.5
$61,000–$80,000	10.0
>$100,0000	5.0
Choose not to answer	12.5
Work status	
Not working	77.5
Working part-time	10.0
Working full-time	10.0
N/A	2.5

Note: *M* = mean; *SD* = standard deviation.

Table 4
Pearson correlations between mean value domain ranking scores, demographic, and self-care adherence variables.

Value domain	HF symptom relief	Physical wellbeing	Social relationships	Autonomy	Hedonism
HF symptom relief		.00	−.36*	−.37*	−.37*
Physical wellbeing			−.46**	−.44**	.30
Social relationships				−.20	−.16
Autonomy					−.17
Demographic variables					
Age	.10	.00	.00	−.04	.09
Gender (1 = Male, 2 = Female)	.01	.00	.04	.07	−.21
Duration of HF diagnosis	.22	−.07	.21	.15	.02
NYHA class (1 = II, 2 = III)	.04	.23	.15	.18	.07
Comorbidity (1 = Yes, 2 =No)	.24	.07	−.02	−.14	−.23
Years of education	−.15	−.28	−.04	.35*	.10
Relationship status (1 = Partner, 2 = No partner)	.21	−.02	−.15	.00	−.05
Work status (1 = Not working; 2 = Part-time; 3 = Full-time)	.12	−.19	.12	−.02	−.14
Household income	.02	−.21	.00	.32*	−.31
Self-care adherence					
Diet	.08	.21	.06	−.27	−.07
Exercise	−07	.13	.08	−.16	.06
Weighing	−.02	−.06	−.08	.10	−.01

Note: $^{*}p < .05$, $^{**}p < .01$

3.2. HF patient priorities

Table 2 presents the percentage of participants who selected a goal as a top-5 priority goal and the percentage that ranked it as first priority. Goals most likely to be among the top-5 were: maintaining physical independence (selected by 55.0% of the sample), preserving energy (52.5%), spending time with loved ones (47.5%) and having control over how one lives one's life (42.5%). Common among the first priority goals were the ability to breathe easily (15.0%), to take care of others (12.5%) and to have control over one's life (12.5%). The goals least frequently endorsed as a top priority were avoiding dry mouth (0.0%), being involved in the community (5.0%) and eating one's favorite food (5.0%).

Based on the mean ranking score for the goal domains, it appears that autonomy was most highly valued by participants ($M = 1.0$, $SD = .77$), followed by physical wellbeing ($M = .85$, $SD = .84$), maintaining social relationships ($M = .82$, $SD = .77$), HF symptom relief ($M = .76$, $SD = .71$) and hedonism ($M = .31$, $SD = .43$). A repeated-measures ANOVA using the Huynh–Feldt correction, $\varepsilon = .89$, indicated that goal ranking scores differed significantly between value domains, F (3.55, 138.41) = 4.85, $p < .001$, $\eta^2_p = .11$. Follow-up pairwise t-tests showed that hedonism was ranked significantly lower than all other domains, $ts(39) > -3.01$, $ps < .01$. The rankings of the latter four value domains did not differ significantly from each other. Pearson moment correlation coefficients indicated that the autonomy and social relationship values were negatively correlated with the HF symptom relief and physical well-being values (Table 4). This suggests that individuals who rated non-health-related goals highly were less likely to prioritize health-related goals. Individuals with higher education ($r = .35$, $p = .03$) and income ($r = .32$, $p = .04$) were more likely to value goals in the functional autonomy domain (Table 4).

3.3. Self-care adherence

As shown in Table 1, the SCHFI items showed good internal consistency when analyzed by specific self-care behaviors. Using a cut-off score of 70 on the SCHFI [42,43], only 32.5%, 22.5%, and 30.0% of the sample were deemed adherent to the diet ($M = 55.1$, $SD = 25.2$) weighing ($M = 47.5$, $SD = 34.5$) and exercise ($M = 55.0$, $SD = 31.6$) components of their HF regimens, respectively. Patients with NYHA Class III ($M = 36.9$, $SD = 22.8$) were less compliant with the physical activity recommendations than those in Class II ($M = 64.76$, $SD = 31.7$; t (38) = 2.90, $p < .01$). None of the other demographic or medical status variables were correlated with

Table 5
Bivariate correlations between demographic, predictor and outcome variables.

Demographics	Self-care adherence			Knowledge		Self-efficacy	Goal compatibility		
	Diet	Weighing	Exercise	General	Applied		Diet	Weighing	Exercise
Age	.05	.24	−.06	−.40*	−.32*	.04	−.08	.25	−.20
Gender (1 = Male, 2 = Female)	−.13	−.11	−.02	.09	.09	.03	.16	.07	−.17
Duration of HF diagnosis	−.28	−.20	−.14	−.14	.15	−.29	−.31*	−.13	.01
NYHA class (1 = II, 2 = III)	−.16	.05	−.42**	−.31	−.07	−.15	−.31*	−.12	−.14
Comorbidity (1 = Yes, 2 = No)	.18	−.32*	.17	.20	−.02	.06	.00	.09	.30
Years of education	.04	.14	−.10	.23	.05	−.13	.18	.13	−.04
Relationship status (1 = Partner, 2 = No partner)	−.02	−.11	.08	.21	.07	−.07	−.12	−.06	−.04
Work status (1 = Not working; 2 = Part-time; 3 = Full-time)	.17	−.09	.04	.31	.24	−.01	.13	−.18	.38*
Household income	.04	.21	−.01	.19	.06	−.07	.12	.18	−.03

Note: $^{*}p < .05$, $^{**}p < .01$.
NYHA class = New York Heart Failure Association classification; SCHFI = Self-Care Heart Failure Index; HF = heart failure.

Table 6
Bivariate correlations between predictor and outcome variables.

	1	2	3	4	5	6	7	8	9
Knowledge									
1. General		.31*	−.02	.11	−.15	−.26	.20	.35*	−.04
2. Applied			.28	.11	−.26	−.21	.33*	.01	−.01
3. Self-efficacy				.17	.04	−.13	.53**	.14	.36*
Goal compatibility									
4. Dietary restriction					.21	.19	.24	.19	.25
5. Daily weighing						−.01	.04	.15	.07
6. Physical activity							−.12	−.25	.34*
Self-care adherence									
7. Dietary restriction								.47**	.34*
8. Daily weighing									−.22
9. Physical activity									

Note: $^{*}p < .05$, $^{**}p < .01$.

adherence. The mean ranking scores of the goal domains were not significantly correlated with adherence to self-care recommendations (Table 4). The degree to which participants were compliant with dietary recommendations was positively correlated with adherence to physical activity and daily weighing ($r = .34$–$.47$, $p < .05$;Table 6).

3.4. Self-efficacy

The mean SCHFI confidence score of 62.4 ($SD = 17.4$) was below the cut-off of 70, which suggests that participants were not confident in their ability to manage their conditions. Self-efficacy did not correlate significantly with any of the demographic variables ($r = -.29$ to .06, $p > .05$; Table 5) or with HF knowledge and goal compatibility ($r = -.13$ to .28, $p > .05$; Table 6). In terms of self-care adherence (Table 6), higher level of self-efficacy was correlated with better compliance to diet ($r = .53$, $p < .01$) and physical activity ($r = .36$, $p < .05$), but it was not associated with adherence to daily weighing ($r = .14$, $p > .05$).

3.5. HF knowledge

General (the DHFKS) and applied (KAQ) HF knowledge were significantly inter-correlated ($r = .31$, $p < .05$). Bivariate correlations of the two variables with demographic variables and other predictors (Table 5) indicated that older adults were less knowledgeable about HF ($r = -.40$, $p < .05$) and less able to apply that knowledge ($r = -.32$, $p < .05$). Applied and general HF knowledge did not correlate with self-efficacy ($r = -.26$ to .28, $p > .05$; Table 6). Those more knowledgeable about HF were more likely to weigh themselves daily ($r = .35$, $p < .05$), and those better able to apply their knowledge about HF were more compliant with their dietary regimen ($r = .33$, $p < .05$).

Table 7
Hierarchical regression analysis predicting the effects of illness severity, self-efficacy, and goal compatibility on adherence to physical activity.

Predictors	Step 1		Step 2		Step 3	
	β	SE (B)	β	SE (B)	β	SE (B)
Illness severity						
NYHA class	−.42**	9.61	−.38*	9.32	−.32*	8.87
Self-efficacy						
SCHFI confidence	–	–	.30*	.26	.35*	.25
Goal compatibility						
Physical activity		–	–	–	.33*	.95
Total R^2	.18**		.27*		.37*	
$R^2\Delta$	.18**		.09*		.11*	
F	8.39**		6.76**		7.11**	

Note: SE (B) = standard error of unstandardized coefficient; NYHA class = New York Heart Association classification; SCHFI = Self-Care Heart Failure Index; $R^2\Delta$ = change in R^2.
$^{*}p < .05$; $^{**}p < .01$.

3.6. Goal compatibility

Goal compatibility was associated with several demographic and predictor variables, as well as one of the indices of adherence. Specifically, individuals who had lived with their diagnosis of HF longer and had more severe HF were less likely to regard dietary restrictions as compatible with personal goals ($r = -.31$, $p < .05$). Patients working more hours outside the home were more likely to consider their prescribed exercise regimen as compatible with their personal goals ($r = .38$, $p < .05$). The extent to which dietary and weighing recommendations were compatible with priority goals was not associated with adherence to those respective self-care regimens ($r = .15$, $p = .34$; $r = .24$, $p = .08$, respectively; Table 6). However, higher compatibility between physical activity and priority goals was associated with better adherence to exercise regimens ($r = .33$, $p = .04$).

A hierarchical regression (Table 7) was performed to determine whether goal compatibility added explanatory power above and beyond other predictors of exercise adherence. Illness severity explained 18.1% of variance in adherence to physical activity ($F(1, 38) = 8.39$, $p = .006$). The inclusion of self-efficacy explained 9.0% of the variance above that accounted for by illness severity ($F\Delta$ (1, 37) = 6.76, $p = .043$). Finally, goal compatibility accounted for a significant amount of variance (11.0%) in adherence above and beyond illness severity and self-efficacy, ($F\Delta$ (1, 36) = 7.11, $p = .019$). In social science research, this is considered a small to moderate effect that is relevant to clinical practice [59,60]. Combined, the predictors explained 37.2% of the variance in adherence to exercise.

4. Discussion and conclusion

4.1. Discussion

The primary goal of this study was to determine whether considering patients' broad range of goals could advance the understanding of HF self-care adherence. This study was among the first to elucidate patient priorities outside of HF care in a quantitative manner, and to report on the importance of illness-management when juxtaposed against other goals.

Our results showed that the majority of HF patients' valued goals related to functional autonomy. The most common top-5

goals chosen by half of the sample were 'maintaining my physical independence', 'having energy to do the things I want to do' and 'having control over how I live my life'. Preserving the quality of social relationships also was an important goal domain, with one-third of the participants selecting 'to avoid being a burden on my family' and 'to take care of my family and loved ones' as a priority. Participants placed comparatively much less value on goals related to pleasurable pursuits. Although qualitative studies also have shown that autonomy and social relationships are paramount to HF patients [24,25,49,50,61,62], this study is the first to indicate that these goal domains supersede goals related to physical wellbeing and HF symptom relief. That is, although most individuals indicated that managing their HF was important, these health-related goals did not predict adherence and were not necessarily more important than non-health-related goals. This finding is in keeping with the observation that patients often have to weigh their HF management goals in the context of other pressing life matters [31].

Consistent with past reports [4,10,56,63–65], our sample of HF patients reported low compliance to self-care regimens. It was speculated that patients who prioritize HF management second to other life events would be less adherent to self-care recommendations [22,31]. This claim was not supported in the present work, as the level of importance attributed to health-related goals did not influence patient compliance. Rather, it was the perceived compatibility of a goal with self-care, and not its importance that predicted exercise adherence.

As observed in past studies [55,56,66], predictors of self-care adherence varied depending on the type of health behavior. Self-efficacy predicted adherence to the more complicated diet and exercise regimens but not to the relatively straightforward daily weighing. This is compatible with Bandura's assertion [67] that self-efficacy should have the most impact on tasks that involve requisite skills. Furthermore, patients with general or applied knowledge about HF were more likely to monitor their weight and follow salt and fluid restrictions, respectively. However, they were not more likely to adhere to their exercise regimen. This may be because maintaining adequate levels of physical activity relies less on didactic knowledge and more on the experiential ability to gauge one's own physical capacity.

The most noteworthy finding in the current study was that goal compatibility predicted physical activity adherence above and beyond the variance accounted for by self-efficacy and illness severity. This finding, and others on non-patient populations [32–36], highlights the fact that even with adequate self-efficacy, individuals may not follow exercise regimens if they fail to perceive its compatibility with their valued life goals. It may be difficult for individuals to simultaneously pursue multiple goals in light of finite resources (e.g., time and energy) [68]. For example, HF patients who are prone to fatigue might be cautious about the amount of energy they can expend on a single activity. Accordingly, concerns about the cost of a self-care behavior on other activities need to be addressed in order to increase patient compliance.

There were some study limitations that may have affected the interpretation of our findings. First, it is possible that the priorities of our sample of stable HF patients may not be generalizable to NYHA IV patients, who were excluded in the study. Accordingly, future research should examine whether illness severity affects the degree to which patients view HF management as important relative to other life goals. A second limitation is that some of the older participants struggled with the abstract nature of the goal-compatibility task and required repeated prompts. While the goal compatibility task yielded high internal consistency (Cronbach's α ranged from .78 to .91), the usability of the tool on an older population warrants further exploration.

4.2. Conclusion

Gleaning the primary concerns of HF patients rather than simply cataloging a list of goals was effective for understanding their decision-making process. HF patients face multiple competing priorities in their day-to-day lives, and goals related to functional autonomy and good social relationships are often viewed to be equally as important as physical wellbeing. The perceived compatibility of these personal goals with physical activity recommendations had significant impact on adherence to exercise regimens. Goal compatibility assessments are helpful for pinpointing areas of discord between sense of self and the consequences of practicing self-care recommendations.

4.3. Practice implications

Prior to prescribing a health behavior change, it is essential to assess patients' needs and their valued life goals outside the health domain. The use of visual analog scales enables individuals to visualize and appraise how self-care regimens fit with their other life priorities. This approach could improve patient–provider communication and lead into problem solving around apparent barriers to behavior change. More specifically, the goal compatibility task can be used as part of an MI intervention to measure ambivalence toward health behavior change. Reconciling discrepancies between patient valued life goals and physical activity recommendations is likely to generate intrinsic motivation to perform self-care. Patients' interventions might also be more effective if patients' desire for autonomy and social functioning were explicitly addressed and leveraged. Turning the spotlight on what matters to the patient, rather than to the provider, brings us a step closer to patient-centered care.

Conflicts of interest

The authors declare no conflicts of interest.

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