**Table 2.** Cardiac Patient Health Behavior Studies Guided by the Theory of Planned Behavior

| **Author** | **Purpose** | **Sample** | **Concept measure** | **Analytic technique** | **Empirical findings** |
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| Blanchard et al33 | Evaluate the TPB as a useful framework for understanding exercise intention and behavior motivation during and after phase 2 CR | 81 patients entering the Glenrose CR program | **Attitude**: 6 instrumental and affective aspects (α = .69, during CR; α = .74, post-CR)  **SN**: 3 items  (α = .86, during CR; α = .65, post-CR)  **PBC**: 4 items  (α = .71, during CR; α = .83, post-CR)  **Intention**: 2 items  **Behavior:**  Exercise adherence: (no. of exercise sessions attended/no. of exercise sessions prescribed at the start of CR) x 100  Self-reported exercise: LSI | Hierarchical regression | Attitude, SN, and PBC accounted for 38% of exercise intention, and intention explained 23% of exercise adherence during CR.  Attitude, SN, and PBC predicted 51% of exercise intention, and intention predicted 23% of exercise adherence after CR. |
| Blanchard et al34 | Evaluate the TPB as a useful framework for understanding exercise intention and adherence during phase 2 CR | 215 patients entering the Glenrose CR program | **Attitude**: 6 instrumental and affective aspects (α = .83)  **SN**: 3 items (α = .92)  **PBC**: 4 items (α = .85)  **Intention**: 2 items  **Behavior:**  Exercise adherence: (no. of exercise sessions attended/no. of exercise sessions prescribed at the start of CR) x 100  Past exercise: LSI  **Behavioral beliefs:** 8 items (α = .87)  **Normative beliefs:** 6 items (α = .79)  **Control beliefs:** 8 items (α = .93) | Hierarchical regression | Attitude, SN, and PBC made significant contributions to exercise intention, accounting for 30% of intention.  Exercise intention accounted for 12% of exercise adherence.  Behavioral, normative, and control beliefs provided information on patients’ attitudes, SN, PBC, and intention to exercise. |
| Blanchard et al35 | Examine whether the TPB explained exercise intention and behavior during home-based CR for 2 time intervals (baseline to 3 months and 3 to 6 months) | 76 patients receiving 6 months of home-based CR | **Attitude**: 4 items  (α = .70, baseline; α = .69, 3 months)  **SN**: 2 items  (α = .95, baseline; α = .94, 3 months)  **PBC**: 4 items  (α = .84, baseline; α = .88, 3 months)  **Intention**: 2 items  (α = .94, baseline; α = .95, 3 months)  **Behavior**:LSI  **Behavioral beliefs:** 8 items  **Normative beliefs:** 6 items  **Control beliefs:** 8 items | Path analysis | Attitude and PBC predicted intention for both time intervals, but SN predicted intention only within the first 3 months.  Intention predicted exercise for both time intervals.  Several baseline beliefs were significantly related to exercise for both time intervals. |
| Blanchard et al21 | Examine the utility of the TPB, PMT, and SCT for explaining physical activity during a home-based CR program | 280 patients with post-MI | **Attitude**: 4 items (α = .68)  **SN**: 3 items (α = .78)  **PBC**: 4 items (α = .85)  **Intention**: 2 items (α = .94)  **Behavior**: Modified version of LSI | Structural equation modeling | Attitude, SN, and PBC predicted 52% of the variance in intention.  PBC had a significant direct effect on 3-month physical activity, explaining 34% of the variance, but intention had no effect on physical activity. |
| Prapavessis et al20 | (1) Using the TPB, compare physical activity beliefs between patients with congenital heart disease and non-patients  (2) Examine whether the TPB can explain physical activity intention and behavior among patients with congenital heart disease | 64 patients with congenital heart disease and 48 non-patients | **Attitude:** 9 experiential and instrumental aspects (α = .89)  **SN**: 5 items (α = .82)  **PBC:** 5 items (α = .91)  **Intention:** 3 items (α = .92)  **Behavior:** LSI | Bivariate correlation, path analysis, structural equation modeling | Among cardiac patients, SN and PBC explained 69% of exercise intention, but attitude did not predict intention.  PBC predicted 11% of exercise behavior, but intention did not predict exercise.  The direct effect of PBC on exercise was greater than the indirect effect of PBC through intention. |
| Johnston et al9 | Test the ability of the TPB’s PBC and intention concepts to predict cardiovascular risk behaviors | 597 patients 1 year after diagnosis with coronary heart disease | **PBC:** 3 items (α = .85)  **Intention**: 1 item (α = .85)  **Behavior**:  Exercise and fitness: LSI, 6-min walk  Smoking cessation: self-report confirmed by serum nicotine | Correlation,Linear regression, logistic regression | PBC predicted exercise, fitness, and smoking cessation, but intention was not a predictor of the health behaviors. |
| Sniehotta et al36 | Examine and combine the CS-SRM and the extended TPB with an action planning model for physical activity and phase IV CR attendance | 103 patients with coronary heart disease | **PBC**: 3 items (α = .86 for physical activity; α = .88 for CR attendance)  **Intention**: 1 item (α = .82 for physical activity; α = .93 for CR attendance)  **Behavior**:  Physical activity: LSI  CR attendance: self-report and CR provider records | Pearson correlation,  hierarchical linear regression, logistic regression | PBC was the only predictor of physical activity.  Intention was a powerful predictor of phase IV CR attendance, whereas PBC was not. |
| Reid et al44 | Examine theoretical constructs from the PMT, TPB, SCT, and EM and their relationship with exercise stage transition in patients with coronary artery disease during the 6 months after hospitalization | 782 patients with coronary artery disease | **Intention:** 1 item  **Behavior:** Exercise stage transition: 1 item for current exercise status | Logistic regression | Lower intention to exercise was associated with regression from active exercise stages between baseline and 6-month follow-up. |
| Godin et al42 | Examine intention to exercise in patients with coronary heart disease | 161 patients with coronary heart disease | **Attitude:** 8 items (α = .83)  **SN**: 1 item  **PBC:** 9 items about perceived barriers  (α = .73)  **Intention**: 1 item  **Behavioral beliefs:** 11 items (α = .80)  **Normative beliefs:** 4 items (α = .83) | Multiple regression | PBC, habits, and perceived difficulties predicted intention, explaining 41% of the variance in intention.  Attitude and SN were not a predictor of intention.  Consideration of behavioral and normative beliefs did not influence prediction of exercise. |
| Mosleh et al45 | Examine the effect of a theory-based invitation letter on CR attendance | 375 patients with acute MI or coronary revasculari-zation | **Attitude:** 6 instrumental and affective aspects  **SN**: 2 items  **PBC:** 4 items  **Intention**: 2 items  **Behavior:** 8-week CR attendance recorded by CR nurses | Multiple logistic regression | Patients with higher attitude, SN, PBC, and intention to attend the CR program showed greater attendance. |
| Pullen et al43 | Analyze female perspectives toward illness and CR and how they relate to their decisions about CR attendance | 8 women who had to decide whether or not to attend CR | **Attitude, SN, PBC, behavior:** Semi-structured interviews | Interpretative phenomeno-logical analysis | Women who decided to attend CR displayed a positive attitude and greater perception of control (PBC) over CR compared to those who declined to attend CR. |
| Jeihooni et al41 | Determine the effect of TPB concepts on lifestyle change in patients with MI | 175 patients with MI | **Attitude:** 21 items  **SN**: 18 items  **PBC:** 22 items  **Intention:** not specified  **Behavior:** healthy lifestyle: 10 items  (α range of all items = .75-.95) | Logistic regression | Attitude, SN, and PBC predicted intention to change lifestyle in patients with MI, explaining 39.6% of intention. |
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| Wu et al37 | Identify predictors of sodium intake in HF patients | 244 patients with chronic HF | **Attitude, SN, PBC:** DSRQ (α = .91, .71, and .87, respectively)  **Behavior:** Dietary sodium intake: 24-hr Una (mmol) | Multiple regression | SN was a predictor of sodium intake, but attitude and PBC were not. |
| Welsh et al38 | Examine the effect of an educational intervention for a low-sodium diet for HF patients  Examine the effect of the low-sodium diet intervention on attitude, SN, and PBC | 52 patients with HF | **Attitude, SN, PBC:** DSRQ (α = .86, .71, and .64, respectively)  **Behavior:** Dietary sodium intake: food diaries reviewed by a nurse | Pearson’s correlation | Positive attitude at 6 weeks and SN at baseline, 6 weeks, and 6 months were associated with lower dietary sodium intake at 6 months.  Less perceived control (higher PBC in this study) at 6 weeks was associated with higher sodium intake at 6 months. |
| Bursey and Craig40 | Examine the relationships among attitude, SN, PBC, and intention to quit smoking in patients after CABG | 32 patients who had received CABG | **Attitude, SN, PBC, Intention, Behavioral beliefs, Normative beliefs, Control beliefs:** DOASC questionnaire  **Behavior:** Smoking cessation: a follow-up telephone call | Spearman’s correlation | Attitude and PBC were significantly related to intention to quit smoking, but SN was not.  Behavioral, normative, and control beliefs had positive relationships with attitude, SN, and PBC, respectively. |

Abbreviations: CABG, coronary artery bypass graft; CR, cardiac rehabilitation; CS-SRM, Common-Sense Self-Regulation Model; DOASC, Determinants of Adult Smoking Cessation; DSRQ, Dietary Sodium Restriction Questionnaire; EM, Ecological Model; HF, heart failure; LSI, Leisure Score Index; MI, myocardial infarction; PBC, perceived behavioral control; PMT, Protection Motivation Theory; SCT, Social Cognitive Theory; SN, subjective norm (now perceived norm); TPB, Theory of Planned Behavior.