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Impact of Mother-Daughter Relationship on Hypertension Self-Management and Quality of Life: Testing Dyadic Dynamics Using the Actor-Partner Interdependence Model

Celeste Shawler, PhD, PMHCNS-BC [Associate Professor],

University of Louisville School of Nursing, 555 South Floyd Street, Room 4038, Louisville, KY 40292

Jean Edward, PhD, RN, CHPE [Assistant Professor],

College of Medicine, University of Kentucky Medical School

Jiying Ling, PhD, MS, RN [Assistant Professor],

Michigan State University, School of Nursing

Tim N. Crawford, PhD, MPH [Assistant Professor], and

University of Louisville School of Nursing Biostatistician

Mary Kay Rayens, PhD [Professor]

University of Kentucky, College of Nursing

Hypertension (HTN) is one of the leading factors associated with cardiovascular disease (CVD) affecting over 77 million (one in every three) adult Americans over the age of 20.¹ The prevalence of HTN is nearly equal between men and women until 65 years old, after which women have a higher prevalence of HTN (71.8%) and HTN-related deaths (55.2%) compared to men (63.9% and 44.8%).¹ The prevalence of HTN among women increases with age.² Hypertension-related heart failure with preserved ejection fraction among women is twice as common as among men.³ Researchers also found that although 82.7% of individuals are aware of their HTN, only about 51.9% have their blood pressure controlled to less than 140/90 mm Hg.⁴ This is lower than the goal of the Healthy People 2020 (61.2% by 2020)⁵ and the Million Hearts Initiative (65% by 2017).⁶ Though HTN treatment rates are similar across age groups of women, HTN control is significantly poor among older women, with only 20% of hypertensive women aged 70–79 years having controlled blood pressure compared to 41% and 37% of those aged 50–59 and 60–69 years, respectively.⁷

Self-management is a highly effective strategy to help reduce and maintain blood pressure in individuals with HTN and inner strength has been identified as an intrinsic motivational factor playing an important role in the emotional health and wellbeing of women experiencing chronic health conditions.^{8,9} Recently researchers developed a Model of Inner Strength, and evaluated the effect of inner strength on self-reported health status with a sample of older individuals.¹⁰ Findings indicate that increased inner strength mediates the relationship between disease and self-rated health of older people.

Higher levels of perceived control over health have shown to reduce emotional stress in patients with heart failure, and increase the emotional well-being of spouses.¹¹ Mother-

daughter relationships have been shown to play a significant role in facilitating self-management of chronic illnesses.¹² Likewise, Neuberger and colleagues (2011) reported that mothers' concern was a predictor for daughters engaging in preventive behaviors.¹³ Other aspects influenced by the intergenerational mother-daughter dyad include adult daughters' influence on mothers' health-related decision making and ability to navigate the health care system.¹⁴

Although existing dyad research provides evidence of the influence of mother-daughter relationships on health outcomes, gaps in understanding the influence of these relationships on HTN self-management still exist. There is no dyad research on the influence of inner strength and perceived control on HTN self-management and HRQOL among older women and their adult daughters. As both the older-adult population and the rates of chronic illnesses continue to grow, adult daughters are more likely to be assisting with management of chronic conditions such as HTN.¹⁵ Therefore, the Actor-Partner Interdependence Model (APIM) guided investigations. The purpose of this study was to test the impact of the quality of the mother-daughter relationship, inner strength, and perceived control on HTN self-management and HRQOL for both members of the dyad.

Methods

Design and Sample

A longitudinal predictive research design was used. Inner strength, perceived control, the quality of the mother-daughter relationship, HTN self-management behaviors and HRQOL in older mothers and their adult daughters were assessed at baseline and six-month follow-up. In the study, the Intergenerational Hypertension Self-Management Conceptual Framework (Figure 1) and the Actor-Partner Interdependence Model (APIM) were used to investigate the associations between the quality of mother-daughter relationships, inner strength, and control on the outcomes of HTN self-management and HRQOL over time in older mothers and their adult daughters.

A total of 51 older mother-adult daughter dyads were recruited from four senior citizen centers in an urban area. The principle investigator (PI) made appointments with the directors to obtain permission for recruitment. Then the PI and or Graduate Research Assistant (GRA) arranged a date for a presentation to the participants about the study. The PI and GRA returned several times a week to specifically ask older mothers about being in the study. Data were collected from all 51 dyads; 46 dyads completed the six-month follow-up (90% retention).

Inclusion criteria for mothers were: (1) aged 65 years or older; (2) diagnosed with HTN as defined by the American Heart Association; (3) have a daughter who provides some assistance as evidenced by selecting at least one category on the Lawton Instrumental Activities of Daily Living Scale¹⁶ and/or assistance with Activities of Daily Living on the Katz ADL Scale.¹⁷ If there was more than one daughter, and in all cases only one lived nearby and provided some assistance to her mother, this daughter was recruited to the study. Inclusion criteria for daughters were: (1) may or may not have HTN (2) provide some level of care or assistance to the mother as described in criteria for mothers. Both mothers and

daughters were community dwellers, English speaking, and able to complete questionnaires as read to them by the PI or GRA at baseline and at six months follow-up.

Measures

A total of six measures were used to collect data in this study. The *Autonomy and Relatedness Inventory* (ARI) has demonstrated excellent internal consistency (Cronbach's α ranging from .90 to .94) and construct validity and was used to measure the quality of primary intimate relationships.¹⁸ In this study Cronbach's alphas were .93 and .94 at baseline and follow-up respectfully. The *Medical Outcomes Study 36-Item Short-Form Health Survey* (SF-36) with Cronbach's α ranged from .76 to .93 was used to measure HRQOL and has been validated extensively in prior research.^{19,20} In this study Cronbach's alphas for SF-36 were .87 and .82 at baseline and follow-up respectfully. The *Blood Pressure Self-Management, Hill-Bone Scale* was used to measure individual compliance to HTN therapy and has shown to be a reliable and valid measure (Cronbach's α = .68) for appointment keeping, medication compliance, and low salt diet in elderly patients with HTN.²¹ In this study Cronbach's alphas were .69 and .68 at baseline and follow-up respectively. The *Inner Strength Questionnaire* (ISQ) was used to identify and facilitate strengths and spiritual connectedness for participants and has shown to be a valid measure of inner strength (Cronbach's α = .91).^{22,23} The *Control Attitudes Scale-Revised* (CAS-R) was used to measure the degree to which participants feel they have control (and conversely helplessness) related to their cardiac disease and has shown to be a reliable and valid measure (Cronbach's α = .86).^{24,25} The reliable and valid *Control Attitudes Scale – Family* (CAS-F) was also used to assess perceptions of family members towards their relative's cardiac condition.²⁶

Procedures

With approval from the University Institutional Review Board, older mothers were recruited from urban senior citizen centers. The older mothers contacted a daughter who gave some assistance to them as described in the inclusion criteria. The PI and GRA explained the study to all participants and obtained informed consent prior to data collection. All interviews were conducted in a private space at the recruitment sites or in the women's homes. During all interviews, the PI or GRA read each question to the participants while the women followed the questions by simultaneously viewing a large font version of the measures. All women were interviewed at baseline and again six months later. Incentives for participation were a \$10 gift card after the first interview and a \$20 gift card after the second interview.

Data Analysis

Descriptive analyses were performed on both the 51 dyads that had data collected at baseline and the 46 dyads that had data collected at follow-up. Means and standard deviations (SD) were calculated for continuous variables, and frequencies and percentages were calculated for the categorical variables. To determine differences in demographic characteristics between the mothers and daughters, paired sample *t*-tests and McNemar's tests were used for continuous and categorical variables respectfully. Also, paired samples *t*-tests were used to examine differences in mother-daughter relationship (ARI) scores, self-management

behaviors (Hill-Bone), and HRQOL (SF-36) between mothers and daughters. Pearson product-moment correlation was used to determine correlations among the continuous predictor and the outcome variables.

Because of the dyad-based focus of this study, the analysis for self-management behaviors of hypertension was completed on the 18 dyads where daughters also had hypertension. All mothers and daughters completed the HRQOL; therefore, 46 dyads were included in this analysis.

The APIM was used to determine how the outcomes HRQOL and HTN self-management were influenced by both members of the mother-daughter dyad. An actor effect was considered to be the impact each independent variable (inner strength, control attitudes, and quality of relationship) had on their own outcomes (HRQOL and HTN self-management). The partner effect was considered to be the impact each partner's independent variable had on their partner's outcomes. For this study we used multilevel APIM regression model with distinguishable dyads to determine the actor and partner effects of inner strength and control attitudes on health related quality of life and self-management behaviors. All analyses were conducted using SAS version 9.4™ (Cary, NC).

Results

Sample Characteristics

Fifty one dyads were recruited at baseline and 46 dyads remained in the study at six-month follow up. There were 18 mother-daughter dyads where both members had hypertension, and these pairs completed the HTN self-management behaviors questionnaire. The mean age of the mothers was 78.1; the daughters had a mean age of 52.5 years. African-Americans and whites each made up 49% of the dyads while Asians made up approximately 2% of the dyads. Mothers were less educated than their daughters (37% of mothers had received some college education vs. 67% of daughters). Mothers and daughters reported that either they had enough money for everything they needed (31% vs. 43%, respectively) or had enough money if they were careful (51% vs. 33%, respectively).

Mother-Daughter Comparisons

As shown in Table 1 mothers perceived better mother-daughter relationship (ARI) at baseline than their daughters. There were no significant differences in the inner strength scores between the mothers and daughters. Among the dyads with HTN, mothers had better HTN self-management than their daughters at six-month follow up. Specifically, compared to daughters, mothers had significantly higher reducing sodium intake scores and higher medication adherence scores at six-month follow-up. As expected, daughters had significantly better HRQOL, better physical functioning, general health and higher physical component scores at six-month follow-up than their mothers. However, at six-month follow up daughters had significantly lower mental component scores than their mothers.

Actor and Partner Effects: Mother-daughter relationship on Health Related quality of Life and Hypertension self-management

The APIM was conducted to determine actor and partner effects on self-management scores and SF-36 scores. With Hill-Bone as the dependent variable, the overall model was not a significant fit to the data ($\chi^2 = 1.5$, $p = 0.47$). However, the model for SF-36 was a significant fit ($\chi^2 = 9.66$, $p = 0.008$). Overall, there were no significant actor or partner effects for both mothers and daughters on the overall SF-36 score or the Hill-Bone overall score.

For the 46 dyads and effects on the SF-36 subscales for the 46 dyads ARI scores demonstrated actor effects for the mother for physical functioning ($b = 0.55$, $p = .04$). In other words, mothers with higher ARI scores positively impacted their own physical functioning scores. There were no other significant actor or partner effects on the SF-36 subscales for both mothers and daughters.

Impact of Inner Strength on Health Related Quality of Life and Hypertension Self-Management

Multiple multilevel APIM regression models were conducted to determine the impact of inner strength on quality of life, self-management, and their respective subscales. For each model, mother and daughter's quality of life and self-management were regressed on the mother and daughter's inner strength. Overall, the APIM regression models were not significant for self-management. There were significant models for overall health related quality of life ($\chi^2 = 6.5$, $p = 0.040$, physical functioning ($\chi^2 = 4.6$, $p = 0.03$). There were significant actor effects on quality of life for both mothers and daughters. Mothers with higher inner strength scores had higher quality of life and daughters with higher inner strength scores had higher quality of life. For the quality of life subscales, mother's actor effects were significantly associated with their own physical functioning scores ($b = 0.93$, $p = 0.007$). Daughters had significant actor effects on their own emotional problems. There was also a significant partner effect on daughter's emotional problems; mothers with higher inner strength had daughters with lower emotional problems (Table 2).

Impact of Perceived Control Attitudes on Health Quality of Life and Hypertension Self-Management

Multilevel APIM regression models were conducted to determine the impact control attitudes had on mother and daughter's quality of life and self-management. Overall, the regression models for HTN self-management were not a significant fit. However, the models for health related quality of life ($\chi^2 = 13.1$, $p = 0.002$) were significant. For quality of life, there were no significant actor or partner effects (Table 3).

Discussion

Findings from this study indicate that mother-daughter relationships (ARI) can have an influence on self-management of HTN and health outcomes. The mothers' perceived relationship quality with daughters as directly impacting her own self-management of HTN and HRQOL while also indirectly affecting their daughters' self-management. Similarly, the

daughter's perceived strength of her relationship with her mother directly influenced self-management and HRQOL and indirectly affected mothers' self-management and HRQOL. These findings are consistent with research that family support and involvement in plan of care can positively affect self-management behaviors in hypertensive individuals.¹² Research has demonstrated that high quality family relationships result in better health outcomes.²⁷ Neuberger, Silk, Yun, Bowman, and Anderson¹³ found that mothers' concern is a predictor for daughters to engage in preventive behavior. In this study the mothers scored higher on the quality of the relationship and did influence the daughters.

Mothers rated the relationship quality higher than daughters at baseline and at the six-month follow up. Daughters had significantly higher mean SF-36 scores at both baseline and six-month follow-up. Daughters had higher physical functioning scores at baseline and six-month follow-up as well as higher general health scores. However, daughters had lower mental health scores at six months. Because adult daughters are likely to be caregivers¹⁵ it is critical to consider the mental health and well-being of the daughters. Thus, exploration of the factors that influence perceptions of the quality of the relationship between two generations of women should be further explored.

These findings demonstrate the interconnectedness of mothers and daughters rating of the quality of the relationship (ARI) with HRQOL (SF-36). Research has demonstrated that dyad-based intervention significantly influenced both mothers and daughters with diabetes in increasing weight loss.²⁸ Mothers influence on daughters encouraged daughters to participate in self-care and preventive measures. Likewise, it has been demonstrated that emotional regulation of mothers and daughters predicted positive health effects for the dyad.²⁹

Among the dyads with hypertension, mothers and daughters differed significantly on the overall Hill-Bone scale (HTN self-management) at baseline and at six-month follow up. Although self-management of hypertension can be highly effective³⁰, it is estimated that only about 52% have their blood pressure controlled.⁴ Exploration of the factors affecting why mothers have better HTN self-management behaviors than daughters warrants further study.

There were no significant correlations between the ARI scores and the Hill-Bone overall score. There were significant correlations between mothers' ARI score and mothers' SF-36 and daughters' ARI score and mothers' SF-36 scores. There was a significant correlation between the mothers' SF-36 and the daughters' SF-36 score. These findings demonstrate the interconnectedness of mothers and daughters rating of quality of the relationship (ARI) with HRQOL (SF-36). This finding is consistent with research related to mothers and daughters with diabetes and mother-daughter dyads engaging in proactive strategies of emotional regulation report greater satisfaction and positive affect for the dyad.²⁸

There were no other significant actor or partner effects on the Hill-Bone subscales. However, there are no specific studies of older mothers-adult daughter dyads with hypertension and how the relationship quality may affect hypertension self-management behaviors.

For the total number of dyads at six-month follow-up and effects on the SF-36 subscales for the 46 dyads ARI scores demonstrated actor effects for the mother for physical functioning ($b=0.55$, $p=.04$). Mothers with higher ARI scores positively impacted their own physical functioning scores. There were no other significant actor or partner effects on the SF-36 subscales for both mothers and daughters.

According to the APIM, mothers and daughters both exhibited some actor effects on their outcomes. Mothers rated their HTN self-management higher than daughters. Since we know HTN increases with age, and the daughters do not manage their HTN as well as mothers, further exploration of this discrepancy in generations should be explored.

Limitations

Even though this study was longitudinal and had a 90% retention rate of dyads at six-month follow up, less than one-half of the daughters ($n = 18$) had hypertension. When measuring the outcomes in APIM analysis, it is important to have the entire sample included. Future studies will include larger samples and require that both members of the dyad have hypertension. Even though there was important racial representation in this sample (49% White; 49% African American; 2% Asian) the education level of both mothers and daughters was fairly high.

Even with small statistical significance of the variables examined in this study, there is some evidence that the older mothers and their adult daughters influence each other in some manner. The use of actor partner interdependence of older mothers-adult daughters warrants further study to examine relationship effect on health outcomes. In this pilot study, completed as a federally funded research and training award, the sample size was influenced by small research funds.

Nursing Implications and Recommendations

Findings from this study provide several implications for nursing practice, including the optimal use of mothers, daughters and other family members in planning and management of care in persons with HTN to promote adherence to treatment management. Further research is recommended to understand the influence of mother-daughter relationships on long-term management of chronic illnesses. Interventions should be designed and tested using effective mother-daughter dyad models to further explicate these correlations. As evidenced by the findings in this study, mother-daughter relationships can have some significant positive effect on health outcomes, making it a key component of HTN self-management.

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References

1. Go AS, Mozaffarian D, Roger VL, et al. Heart disease and stroke statistics—2013 update: A report from the American Heart Association. *Circulation*. 2013; 127:e6–e245. [PubMed: 23239837]
2. Nwankwo, T., Yoon, SS., Burt, V., Gu, Q. Hypertension among adults in the United States: National Health and Nutrition Examination Survey, 2011–2012. Vol. 133. Hyattsville, MD: National Center for Health Statistics; 2013.
3. Borlaug BA, Redfield MM. Diastolic and systolic heart failure are distinct phenotypes within the heart failure spectrum. *Circulation*. 2011; 123(18):2006–2013. discussion 2014. [PubMed: 21555723]
4. Nwankwo T. National Center for Health S. Hypertension among adults in the United States : National Health and Nutrition Examination Survey, 2011–2012. 2013
5. U.S. Department of Health and Human Services. Healthy People 2020. Washington, DC: 2014.
6. Centers for Disease Control and Prevention. About the Hypertension Control Champions. 2015 [Accessed February 02, 2017]
7. Wassertheil-Smoller S, Anderson G, Psaty BM, et al. Hypertension and its treatment in postmenopausal women: baseline data from the Women's Health Initiative. *Hypertension*. 2000; 36(5):780–789. [PubMed: 11082143]
8. Roux G, Dingley CE, Bush HB. Inner strength in women: metasynthesis of qualitative findings in theory development. *Journal of Theory Construction & Testing*. 2002; 6(1):86–93.
9. Roux, G., Lewis, KL., Younger, J., Dingley, C. Life transition in women: Psychometric analysis of the inner strength questionnaire; Paper presented at: Proceedings of the National Congress on the State of the Science in Nursing Research; October 8, 2004; Washington, D.C.. 2004.
10. Viglund K, Jonsén E, Lundman B, Nygren B, Strandberg G. Sources and expressions of inner strength among old people who have experienced a crisis in life associated with a disease. *Nordic Journal of Nursing Research*. 2017; 37(1):20–26.
11. Dracup K, Evangelista LS, Doering L, Tullman D, Moser DK, Hamilton M. Emotional well-being in spouses of patients with advanced heart failure. *Heart Lung*. 2004; 33(6):354–361. [PubMed: 15597288]
12. Flynn SJ, Ameling JM, Hill-Briggs F, et al. Facilitators and barriers to hypertension self-management in urban African Americans: perspectives of patients and family members. *Patient Prefer Adherence*. 2013; 7:741–749. [PubMed: 23966772]
13. Neuberger L, Silk KJ, Yun D, Bowman ND, Anderson J. Concern as motivation for protection: an investigation of mothers' concern about daughters' breast cancer risk. *J Health Commun*. 2011; 16(10):1055–1071. [PubMed: 22070448]
14. Washington PK, Burke NJ, Joseph G, Guerra C, Pasick RJ. Adult daughters' influence on mothers' health-related decision making: an expansion of the subjective norms construct. *Health Educ Behav*. 2009; 36(5 Suppl):129S–144S. [PubMed: 19805795]
15. Pillemer K, Sutor JJ. Who provides care? A prospective study of caregiving among adult siblings. *Gerontologist*. 2014; 54(4):589–598. [PubMed: 23840019]
16. Lawton MP, Brody EM. Assessment of older people: self-maintaining and instrumental activities of daily living. *Gerontologist*. 1969; 9(3):179–186. [PubMed: 5349366]
17. Katz S, Downs TD, Cash HR, Grotz RC. Progress in development of the index of ADL. *Gerontologist*. 1970; 10(1):20–30. [PubMed: 5420677]
18. Hall LA, Gurley DN, Sachs B, Kryscio RJ. Psychosocial predictors of maternal depressive symptoms, parenting attitudes, and child behavior in single-parent families. *Nurs Res*. 1991; 40(4): 214–220. [PubMed: 1857646]
19. Lyons RA, Perry HM, Littlepage BN. Evidence for the validity of the Short-form 36 Questionnaire (SF-36) in an elderly population. *Age Ageing*. 1994; 23(3):182–184. [PubMed: 8085500]
20. Ware JE Jr. SF-36 health survey update. *Spine (Phila Pa 1976)*. 2000; 25(24):3130–3139. [PubMed: 11124729]

21. Kim MT, Hill MN, Bone LR, Levine DM. Development and testing of the Hill-Bone Compliance to High Blood Pressure Therapy Scale. *Prog Cardiovasc Nurs*. 2000; 15(3):90–96. [PubMed: 10951950]
22. Dingley CE, Roux G, Bush HA. Inner strength: a concept analysis. *Journal of Theory Construction & Testing*. 2000; 4(2):30–35.
23. Roux, G., Lewis, KL., Younger, J., Dingley, C. Paper presented at: Proceedings of the National Congress on the State of the Science in Nursing Research; October 8, 2004; Washington, D.C. 2004.
24. Evangelista LS, Moser D, Dracup K, Doering L, Kobashigawa J. Functional status and perceived control influence quality of life in female heart transplant recipients. *J Heart Lung Transplant*. 2004; 23(3):360–367. [PubMed: 15019646]
25. Moser DK, Dracup K. Role of spousal anxiety and depression in patients' psychosocial recovery after a cardiac event. *Psychosom Med*. 2004; 66(4):527–532. [PubMed: 15272098]
26. Moser DK, Dracup K. Impact of cardiopulmonary resuscitation training on perceived control in spouses of recovering cardiac patients. *Res Nurs Health*. 2000; 23(4):270–278. [PubMed: 10940952]
27. Canevello A, Crocker J. Creating good relationships: responsiveness, relationship quality, and interpersonal goals. *J Pers Soc Psychol*. 2010; 99(1):78–106. [PubMed: 20565187]
28. Sorkin DH, Mavandadi S, Rook KS, et al. Dyadic collaboration in shared health behavior change: the effects of a randomized trial to test a lifestyle intervention for high-risk Latinas. *Health Psychol*. 2014; 33(6):566–575. [PubMed: 24884910]
29. Martini TS, Busseri MA. Emotion regulation and relationship quality in mother–young adult child dyads. *Journal of Social & Personal Relationships*. 2012; 29(2):185–205.
30. Chodosh J, Morton SC, Mojica W, et al. Meta-analysis: chronic disease self-management programs for older adults. *Ann Intern Med*. 2005; 143(6):427–438. [PubMed: 16172441]

What's New and Important

1. Understanding hypertension self-management behaviors of older mothers and their adult daughters.
2. Using Actor Partner Interdependence Model (APIM) to analyze distinguishable dyads over time.
3. Using variables of inner strength, quality of relationship, perceived control to analyze effect on hypertension self-management behaviors and health related

Figure 1.
Intergenerational Hypertension Self-management Conceptual Framework

Table 1

Comparisons between Mother and Daughter Dyads on Study Variables

Characteristics	Mother Mean (SD)	Daughter Mean (SD)	<i>p</i>
ARI Scale at baseline (N = 51 dyads)	108.6 (17.2)	102.3 (18.2)	0.006
ARI Scale at follow-up (n = 46 dyads)	109.9 (17.2)	101.6 (20.8)	0.002
Hill-Bone Scale at baseline (n = 18 dyads)	52.0 (2.6)	48.5 (4.0)	0.008
Hill-Bone Scale at follow-up (n = 18 dyads)	52.4 (2.5)	49.2 (2.5)	0.002
SF-36 Scale at baseline (N = 51 dyads)	63.0 (16.2)	71.7 (18.1)	0.01
SF-36 Scale at follow-up (n = 46 dyads)	64.2 (11.9)	74.6 (15.7)	0.0001

ARI: Autonomy Relatedness Scale; SF-36: Medical Outcomes Study 36-Item Short-Form Health Survey; Hill-Bone Scale: Blood Pressure Self-Management Scale

Table 2

The Actor Partner Interdependence Model determining the actor and partner effect of inner strength on follow-up HRQOL ($N=46$)

Outcome Variable	Mother			Daughter		
	<i>b</i>	<i>t</i>	<i>p</i> -value	<i>b</i>	<i>t</i>	<i>p</i> -value
HRQOL						
Actor's Inner Strength	0.33	2.02	0.049	0.65	3.30	0.002
Partner's Inner Strength	0.20	1.20	0.24	-0.33	-1.73	0.09
Physical Functioning						
Actor's Inner Strength	0.93	2.82	0.007	0.44	1.94	0.06
Partner's Inner Strength	0.48	1.41	0.17	-0.1	-0.45	0.65
Emotional Problems						
Actor's Inner Strength	-0.17	-0.38	0.70	1.70	3.77	0.0003
Partner's Inner Strength	-0.18	-0.39	0.70	-1.22	-2.78	0.007
Emotional Well Being						
Actor's Inner Strength	-0.35	-0.98	0.33	0.68	1.32	0.19
Partner's Inner Strength	0.14	0.38	0.70	-0.28	-0.57	0.57

Note: Model controlled for age, education, and Charlson comorbidity index score

The Actor -Partner Interdependence Model determining the actor and partner effect of baseline perceived control attitudes on six-month follow-up of Health Related Quality of Life Scores. ($N=46$)

Table 3

Outcome Variable	Mother			Daughter		
	<i>b</i>	<i>t</i>	<i>p-value</i>	<i>b</i>	<i>t</i>	<i>p-value</i>
HRQOL						
Actor's control	0.19	1.34	0.19	0.05	0.41	0.69
Partner's control	-0.04	-0.38	0.70	-0.13	-0.74	0.46
Physical functioning						
Actor's control	0.45	1.59	0.12	0.03	0.22	0.82
Partner's control	0.15	0.70	0.49	-0.20	-1.06	0.30
Emotional Well Being						
Actor's control	-0.15	-0.51	0.61	0.15	0.49	0.63
Partner's control	0.02	0.10	0.92	0.16	0.39	0.71