

**Is Higher Stress Associated with Higher Resilience?
Exploring Married Couples' Experiences Managing Comorbid Diabetes and Osteoarthritis**

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ABSTRACT. Informed by family stress and family resilience perspectives, this study examined couples' experiences with comorbid chronic illnesses in later life. Using data from semi-structured interviews with 28 couples coping with type 2 diabetes and osteoarthritis, we used a qualitative approach to explore stressors and resilience processes associated with comorbid chronic illnesses. Five types of stressors and four types of resilience processes were reported by couple participants. Various stressor and resilience patterns emerged, depending on comorbid illness severity. Respondents reporting high severity in diabetes and osteoarthritis demonstrated fewer resilience processes than did those whose illnesses were not severe. Although most couples exhibited some resilience processes in response to illness-related stress, resilience processes appeared less often among those with self-ratings of high diabetes and arthritis severity and more often among those whose illnesses were less severe. Future research should address buffers of severe comorbid illnesses in later life.

Keywords: Illness comorbidity, stress, resilience, couples in later life

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Illness stressors increase in prevalence and importance for aging individuals as health concerns are more common in later life (Lyons & Levine, 2013). Many older adults experience multiple chronic illnesses simultaneously (Lee & Ory, 2013), with 81 million adults in the United States projected to experience chronic illness comorbidity by 2020 (Bodenheimer, Chen, & Bennett, 2009; Wu & Green, 2000). Among individuals whose multiple chronic conditions include functional impairment (i.e., arthritis), stress levels tend to increase more quickly and with greater intensity (Dunlop, Lyons, Manheim, Song, & Chang, 2004). Some combinations of multiple chronic conditions are also related to higher hospitalization, medical expenses, and mortality rates (Lee et al., 2007; Wolff, Starfield, & Anderson, 2002).

For later-life couples, illness stressors are often experienced in context of marital relationships (Noel-Miller, 2011; Yorgason, Booth, & Johnson, 2008). Indeed, close relationships such as marriage often provide the context for illness prevention (Novak & Webster, 2011), treatment (Idler, Boulifard, & Contrada, 2012), and management (Martire, Hemphill, & Polenick, 2016). Research examining health within marriage relationships suggests there are various aspects of stress (Lee & Roberts, 2018). By contrast, some research suggests that couples are resilient in the face of chronic illness (Fergus, 2011). The purpose of the current study is to explore the potential “pile-up” of stress with comorbid chronic illnesses among later life couples in comparison to potential couple resilience processes that develop in response to health stressors.

Background Literature Linking Marriage and Health

Research examining couples' responses to illness or a health decline provides a complex portrait of the impact of illness within marriage. First, scholars have reported on various stressors that couples endure in the face of chronic severe health challenges related to aging (Karantzas & Gillath, 2017). By contrast, research has also documented ways that couples build unity and closeness as they confront severe illness (Dorval et al., 2005). Despite advances in research in ways that health and couple relationships intersect, most studies to date have focused on how couples address single (albeit difficult) illnesses. The current study fills a unique gap in this body of literature by considering the complexity of multiple chronic illnesses occurring simultaneously.

Comorbid chronic illnesses can have a unique, additive impact on the lives of individuals and their spouses. Individuals suffering from multiple chronic conditions may have poorer functional status, lower quality of life, higher use of outpatient and inpatient care, and greater potential for care fragmentation and medical errors (Barnett et al., 2012). Symptoms and treatment from one condition can also sometimes impact symptoms and treatment of other illnesses (Bayliss, Steiner, Fernald, Crane, & Main, 2003). Within couple relationships, Thomeer (2016) found that higher numbers of comorbid illnesses were linked with higher partner depression levels, especially among wives whose husbands were ill. Yorgason and colleagues found that illness symptoms predicted partner mood and that partner illness can exacerbate comorbid illness symptoms (Roper & Yorgason, 2009; Yorgason, Roper, Sandberg, & Berg,

2012). August, Rook, Franks, and Stephens (2013) found that spousal control was linked to higher stress levels, especially when comorbid illnesses were present. Among the few studies that acknowledged some positives in the face of multiple chronic illness, Lehane, Elsass, Hovaldt & Dammeyer (2017) found that among couples where one partner had multiple sensory impairments, couple communication was linked to well-being through partner support. Also, in a study of spouses with multiple chronic illnesses, Peacock and colleagues (2017) noted that stressors (feeling isolated, making decisions alone), coping efforts (self-care, religiosity, and accessing meaningful formal supports), and rewards (personal growth, gift of fulfilling a commitment to spouse) were associated with comorbid chronic illness.

For the most part, research addressing resilience in couples facing chronic health challenges has drawn from studies of single illnesses. Two studies examining couple responses to cancer suggest that some couples become closer because of the illness (Dorval et al., 2005; Preau et al., 2011). Several studies suggest that couples unite in their response to illness through behaviors such as communal coping, collaborative coping, active engagement, “we-talk,” and sensing a joint “communal body” where the illness is perceived as owned by both spouses (Fergus, 2011; Helgeson, Jakubiak, Seltman, Hausmann, & Korytkowski, 2017; Rohrbaugh, Mehl, Shoham, Reilly, & Ewy, 2008; Yorgason et al., 2010). Other research focuses on how spouses respond to a partner who is ill, for example with empathy for a partner’s pain (Hemphill, Martire, Polenick, & Stephens, 2016).

To sum up, although research on comorbid illnesses paints a stressful picture for individuals and couples, there is evidence that couples may unite in various ways to develop resilience processes. In a daily diary study of couples with type 2 diabetes, Iida, Stephens, Rook, Franks, and Salem (2010) explored ways that couples responded on days with higher diabetes symptom severity. They found that symptom severity was linked to higher same day spousal support provision. Such resilience processes may also occur when couples face multiple chronic conditions. The current study will add to established literature by exploring couples’ resilience processes in the context of comorbid chronic illness and by exploring connections between couple stressors and couple resilience processes.

Theoretical Framework: Family Stress and Resilience with Chronic Illness Comorbidity

Considered from a family stress perspective (McCubbin & Patterson, 1982), managing multiple chronic illnesses may represent a “pile-up” of stressors that impact the family system. The nature of chronic illnesses requires couples to adjust to lifestyles and daily routines, such as having to alter diets and check blood sugar levels, which may promote perceptions of stress (Price, Price, & McKenry, 2010). Having multiple chronic illnesses may exacerbate these changes. For example, exercise can benefit someone experiencing diabetes, but having osteoarthritis may make exercise more difficult due to pain and/or stiffness of joints. Taking medication for one illness may negate or create complications with medications taken for another illness. Furthermore, multiple chronic illnesses may negatively impact already limited financial resources because of different medications and the need to consult additional medical specialists. Over time, the nature of these changes and their associated complications can lead to greater levels of perceived stress and stressor pile-up.

Although making adjustments because of these multiple chronic illnesses may lead to stressor pile-up (McCubbin & Patterson, 1982), the Double ABC-X Model suggests adaptation from stressor pile-up is influenced by adaptive resources and perceptions of this pile-up (McCubbin & Patterson, 1982). Price et al. (2010) noted these adaptive processes mediate health stressors and individual and family outcomes. Having already coped with one chronic illness provides individuals and couples with an opportunity to utilize these earlier experiences and processes for coping with an additional chronic illness, thus promoting resilience (Walsh, 1996). Couples facing multiple chronic illnesses may report key processes indicative of positive outcomes including family belief systems, organizational patterns, and communication processes.

While these processes aid in coping with common stressors, Lee and Roberts (2018) noted that the family stress perspective is not a dyadic theory because it does not account for “the interactive effects of two individual stress and coping processes or an interpersonal process between two partners” (p. 142). As such, some researchers have turned to dyadic coping theories to explain how to deal with stressors that couples face. Bodenmann (2005) suggests couples can adopt three types of dyadic coping strategies: (1) common dyadic coping, in which both partners are coping with a stressful event; (2) supportive coping, in which one partner supports the other partner facing the stressor event; and (3) delegated coping, in which one partner assumes tasks and/or problems solving to reduce the stress the other partner faces. Through these adaptive processes and dyadic coping strategies, couples can develop resilience (Walsh, 1996) to unique stressors generated by multiple chronic illnesses. If resilience processes develop proportionally in response to stress, couples who experience greater stress may also experience greater resilience. If resilience is inversely related to stress, those who experience greater stress may experience lower resilience. Although resilience is not possible without stress, stress may mount without resilience.

Current Study

The current study examines couple stressors and resilience processes in the context of comorbid Diabetes Mellitus (DM) and Osteoarthritis (OA). Incidents of DM currently affect over 21 million people in the U.S., with rates increasing with advanced age (Centers for Disease Control and Prevention, 2014). Studies indicate that diabetes management and well-being are associated with the quality of marriage and other family relationships (Klausner et al., 1995; Trief, Plutz-Snyder, Britton, & Weinstock, 2004; Trief et al., 2003). According to the Centers for Disease Control and Prevention (2017), osteoarthritis is the most common joint disorder in the U.S., affecting over 30 million adults by causing joint pain, stiffness, and inflammation, as well as decreases in motion (Keefe et al., 2002). Partner support of patients with arthritis is associated with increased patient physical activity and better sleep (Martire et al., 2013; Song, Graham-Engeland, Mogle, & Martire, 2015).

Unique stress indicators and resilience processes, along with their interconnections, may be experienced by couples facing DM and OA. As such, we explore couple stress and resilience in the context of comorbid chronic illness by addressing the following research questions.

Research Questions

1. How are couples affected by multiple chronic illnesses? Specifically, what stressors do they face that may be unique to experiencing chronic illness comorbidity?
2. What unique aspects of couple resilience processes emerge in context of chronic illness comorbidity?
3. In what ways are health stressors and resilience processes connected in cases of illness comorbidity?

Methods

Sample and Procedures

Twenty-eight married couples were recruited through a diabetes management clinic and diabetes education classes at two hospitals in a metropolitan county in a Western state (see “Blinded-for-Review”). Couples were required to have one spouse with comorbid diabetes and osteoarthritis, one spouse age 59 or older, and both spouses willing to participate. As presented in Table 1, patients and spouses were around age 68 on average and had been married an average of 42 years. Over 90% of respondents reported to be White, with one wife reporting to be Hispanic and two wives and two husbands reporting “Other” (which suggested they were not African American, White, Hispanic, or Asian). A small number of participants reported lower than high school education, yet 73% of husbands and 58% of wives in the sample reported to have completed some trade or university education beyond high school. Income was not reported by respondents, but 75% of husbands and 66% of wives reported to be retired and 32% of husbands and 39% of wives indicated their finances were not sufficient to “meet emergencies.” Approval was received by hospital and university Institutional Review Boards for research involving human subjects.

Spouses individually completed a baseline survey of demographic and illness information. Semi-structured interviews were conducted using open-ended questions in which couples were prompted to discuss the history, stresses, and meanings of their health challenges. Couples received \$50 Visa gift cards as compensation.

Measures

The main instrument used in this study was a semi-structured qualitative interview. Respondents also completed a baseline quantitative survey providing demographic information, along with information about marital quality and health. For the current study, we used a 10-item scale of marital happiness (Johnson, White, Edwards, & Booth, 1986). Respondents were asked to rate their relationships in terms of spousal understanding, affection received, marital agreement, their sexual relationship, joint activities, and faithfulness. Potential responses included “0” (not too happy), “1” (pretty happy), “2” (very happy), and the scale showed adequate reliability (Chronbach’s alpha = .74). Respondents rated severity of their diabetes and osteoarthritis, with response options including “1” (not bad at all), “2” (not too bad), “3” (bad), “4” (really bad), and “5” (as bad as it could possibly be).

Table 1

Sample Characteristics of Couples Managing Comorbid Chronic Illnesses

| Variables | % (N) OR Mean(SD)/Range |
|--------------------------------------|-------------------------|
| Patient | |
| Husband | 54% (15) |
| Wife | 46% (13) |
| Patient Age | 67.89 (7.47)/58-85 |
| Spouse Age | 68.14 (8.04)/56-82 |
| Years Married | 42 (13.53)/3-66 |
| Years with Osteoarthritis | 16.31 (14.53)/2-50 |
| Years with Diabetes | 11.90 (10.71)/1-35 |
| Patient Osteoarthritis Severity | 2.65 (.85) |
| Patient Diabetes Severity | 2.63 (.79) |
| Husband Number of Chronic Conditions | 3.38 (2.19) |
| Wife Number of Chronic Conditions | 4.93 (2.06) |
| Husband Marital Happiness | 1.62 (0.34) |
| Wife Marital Happiness | 1.53 (0.45) |
| Caucasian Race | 92% (26) |

Note: Marital Happiness measured using Johnson, White, Edwards, & Booth's (1986) 10 item scale of marital happiness (responses options: 0 (not too happy), 1 (pretty happy), 2 (very happy; alpha reliability = .74). Illness severity scales for diabetes and osteoarthritis had the following response options: 1 (not bad at all), 2 (not too bad), 3 (bad), and 4 (really bad), and 5 (as bad as it could possibly be).

Analysis

The authors used a qualitative approach to analyze data from interview transcripts. Open and axial coding were performed using a constant comparative approach (Merriam, 1998). Specifically, transcripts were first open coded by two researchers who reviewed the data to determine broad groupings of themes (Corbin & Strauss, 1990; Daly, 2007). Two categories that emerged are the focus of the present study: illness stressors and resilience processes related to comorbid chronic illnesses. These groupings were then imported into N-Vivo software to manage the data. Next, illness stressors and resilience processes data categories were independently coded (axial coding) by two of the researchers. Researchers identified meaningful pieces of data and organized them into themes until no new themes could be documented (i.e., theoretical saturation; Corbin & Strauss, 1990; Daly, 2007). After initial identification of themes within each category, these two researchers discussed their groupings until reaching consensus. A second team of researchers then reviewed the first team's coding and discussed any discrepancies until they reached consensus. Then, connections between illness stressors and resilience process categories were identified. Data from interviewer field notes (which described participants and their contexts) and from "member checks" (which contained participants' verification of a summary from their interview) were considered in connection with the results.

Results

Illness Stressors

Five illness stressor themes related to illness comorbidity were identified in interview transcripts. These included (a) pile-up of health stressors, (b) stressors related specifically to comorbid diabetes and osteoarthritis, (c) one illness being more severe than others, (d) emotional stress due to illness comorbidity, and (e) medical stressors resulting from illness comorbidity.

Pile-up of health stressors. First, 27 of the 28 couples reported stress due to illnesses other than diabetes and arthritis. Along with managing diabetes and osteoarthritis, participants reported more than 30 other health concerns they were dealing with such as hip/knee/shoulder replacement, blood clots, cancer, osteoporosis, glaucoma, and neuropathy. To give an example of the extreme, one wife reported, “I’ve had two back surgeries, three hips surgeries, three knee surgeries, hand surgery, I have a pacemaker and a stent...” Another participant spoke of development of various conditions in her husband:

Well before he was diagnosed with diabetes he got sleep apnea. . . . We didn't realize what a serious problem that could be and we just sorta ignored it. And so then the other things popped up . . . his heart problems and then the diabetes came.

Illness stressors related specifically to comorbid diabetes and osteoarthritis. Thirteen couples made reference to managing both diabetes and osteoarthritis. One respondent connected arthritis treatment with blood sugar levels stating, “I’ve had a cortisone shot which puts me on a sky-high blood sugar for a while, and I’ve had to deal with that.” When one couple was asked whether they had days when they experienced both arthritic pain and high/low blood sugar levels, they responded that it happens often and continually. Four couples also reported that arthritis limited their ability to exercise, whereas lack of exercise increased problems with diabetes or limited their management options in relation to diabetes.

One illness being more severe than the others. Occasionally (i.e., 11 statements from nine couples), couples reported focusing on one illness over others because of severity. Some couples reported that arthritis pain was much worse than their diabetes symptoms. One wife stated, “With diabetes, it doesn’t limit you. You can do most anything as long as you have your insulin . . . you can do most anything. With arthritis it [only] limits you.” Others emphasized the life-threatening aspect of diabetes overshadowing the pain of arthritis. One respondent noted, “Arthritis is not lethal. Diabetes is. It affects the kidneys and the heart and . . . everything.” Still, others remarked that other illnesses took precedence over both diabetes and arthritis.

Emotional stress due to illness comorbidity. Fifteen couples made 26 references to emotional distress caused by their illnesses. Common descriptions of emotional distress included feelings of stress, depression, discouragement, frustration, fear, worry, being upset, scared, miserable, or annoyed. One respondent connected illness and depression stating,

I think depression is probably one of our biggest enemies. [It] is the depression that the chronic pains and all of these things cause us. The depression makes it a lot more difficult... When at the worst of it is when those things are at the very worst, and it aggravates it and it's because you're down, depressed. That aggravates both of them [diabetes and arthritis] a whole bunch. It makes you hurt worse, it affects the sugar [levels].

Another respondent commented, "I've been over-scared and tensed up because of [the] fact that I don't know what's going on ... my blood sugars are going up and down ... we have a lot of stress in our home right now."

Medical illness stressors resulting from illness comorbidity. Six couples reported medical-related stress due to having to take numerous medications, the cost of managing their illnesses, having polypharmacy complications, medication side effects, and time and energy consuming treatments. One participant's comment illustrates challenges from taking medications for various illnesses simultaneously:

Well, dealing with one ailment ... like arthritis only, that's not too bad a deal because you just [need to] be on a regiment with ibuprofen to control it ... but then you throw in diabetes and arthritis, then you've got more medicines to take and pretty soon you throw in high blood sugar at the same time and you've got more medicines to take and if you wake up late, you forget to take your pills, then one of them is going to go out of balance and then the other one's going to go out of balance and it's just the pits. You can't get one under control because they're all three fighting you.

In sum, couples reported considerable strain due to managing multiple chronic illnesses. Despite these challenges, couples in the study also reported evidence of resilience.

Resilience Processes

Four themes of resilience processes emerged from the interviews as couples discussed their experiences with multiple chronic illnesses. Resilience processes were demonstrated through (a) attitudes towards their situation, (b) couple unity, (c) learning, and (d) beliefs.

Attitudes towards their situation. Fourteen couples made 27 references to accepting their situation, having a sense of control over their illness, and maintaining a positive attitude. In discussing acceptance of their situations, participants talked about not complaining and continuing in normal activities. One participant noted, "To groan about this pain or that pain . . . life is that way. We just accept what we're dealt and we deal with it." Another said, "You don't give up, you just keep going. Even though it might even be embarrassing at times with your health problems, you deal with them. You go ahead and do it."

Couples described feeling in control over their situations by being proactive and doing as much as they could to manage their chronic conditions. One husband stated, "we feel good

because we're doing everything we need to do or can do for the illness. . .” His wife added, “. . . Do the very best you can so that you can say, ‘We are doing everything we can’ . . . there are no ‘If only we had controlled his diet . . . Made him test his blood sugar.’ . . . You just do the best you can and in the end, [if] something happens you go, ‘Ok, we did the very best we could.’” Couples also exhibited positive attitudes in managing their illnesses. One husband summarized it well: “You accept it, and then, what are the things that you *can* do? . . . keep it as positive as possible.”

Couple unity. Twenty couples made 55 references to having a sense of unity in the couple relationship, which was exemplified by co-management of the illness, with one spouse “taking the lead” in taking care of or sharing information with the other spouse, and increased closeness in their relationships. Some couples saw management of the illness as something they did together. One wife said, “It’s our life now, I mean we have to talk about it, we have to know what we’re doing” and her husband added, “And she’s a big help on that, ‘cause she’s telling me, ‘No, you can’t have that,’ or ‘You have to cut down on that portion’ . . . [and] I’m glad about it!” Another couple said, “When we’re in crisis, we go into a different mode. We solve, we work the crisis together.”

In other couples, one spouse took the lead in taking care of or sharing information with the other spouse. One husband remarked, “She always shares all the articles that she reads on diabetes and says now you should do this and this . . . she is very good to keep me informed and reading things like that.” Another husband observed, “She tells me to make sure I take my medicine. . . and I tell her to make sure she takes her medicine. . .”

Some couples reflected increased closeness in their relationship due to illness stressors. One wife said, “[It] even might make you closer . . . You’re so concerned about each other and you’ve stopped thinking about yourself and your own problems.” Another wife reflected, “[we are] a little bit closer than we were in the past. . . . I think now we’re closer than we ever used to be.” Other couples talked about the importance of communication, saying, “I think being able to communicate is extremely important. To express your feelings and your emotions.”

Learning. Nine couples made 13 references to learning about how to manage and cope with multiple chronic illnesses. Couples sought out information together or supported each other in learning about their illnesses. One couple described how they learned together, “if we’ve looked it up before (how to count carbs) and I can’t remember, I’ll ask him how many carbs did we say this item of food has and a lot of times he’ll remember. If he can’t remember, he’ll help me look it up.” One wife reported, “Well, he went to the class with me and learned a lot, I think. . .” and her husband added, “Well, I just studied also, online. . . books. . . as soon as I found out you had it.”

Beliefs. Finally, four couples mentioned religious beliefs as resilience processes. One wife stated, “I think our faith is what keeps us going,” while another husband responded, “Yeah, I pray for her. You bet. . . Makes me feel better . . . makes me feel a lot better.” Another individual stated, “. . . I know that I haven’t had anything more than I can handle. And I’ve always felt like, that God doesn’t give us any more than what He knows we can handle.”

Table 2

Stressor and Resilience Code Counts and Percentages for Couples Reporting Various Levels of High to Low Diabetes and Arthritis Severity.

| Illness Severity | Stressors | | | | | Resilience Processes | | | |
|------------------|-----------|----------|---------|-----------|---------|----------------------|----------|----------|---------|
| | Pile-up | Comorbid | Focus | Emotional | Medical | Unity | Attitude | Learning | Beliefs |
| Both Severe | 42 (30%) | 7 (29%) | 4 (29%) | 15 (42%) | 4 (50%) | 10 (18%) | 5 (19%) | 2 (15%) | 1 (25%) |
| Diabetes Severe | 36 (26%) | 3 (13%) | 2 (14%) | 10 (28%) | 2 (25%) | 8 (15%) | 7 (26%) | 1 (8%) | 2 (50%) |
| Arthritis Severe | 27 (19%) | 10 (42%) | 4 (29%) | 9 (25%) | 1 (13%) | 12 (22%) | 4 (15%) | 6 (46%) | 0 |
| Neither Severe | 36 (26%) | 4 (17%) | 4 (29%) | 2 (6%) | 1 (13%) | 25 (46%) | 11 (41%) | 4 (31%) | 1 (25%) |

Note: Percentages in parentheses reflect column percentages (aggregate percentages in a given column equal approximately 100%)

How are chronic illness stressors linked with resilience processes?

As mentioned above, research participants designated as patients completed survey questions that assessed levels of severity of their arthritis and diabetes (“How severe would you say this condition is”: 1 = “not bad at all”; 2 = “not too bad”; 3 = “bad”, 4 = “really bad”, 5 = “as bad as it could possibly be.” In each case, scores above 3 were considered “severe”). In an effort to identify if stressors and resilience factors differed for patients depending on severity of their chronic illnesses, we divided patient participants into four groups according to how they rated the severity of their diabetes and arthritis: (a) Neither Severe ($n = 8$), (b) Only Arthritis Severe ($n = 6$), (c) Only Diabetes Severe ($n = 5$), or (d) Both Severe ($n = 9$). Table 2 shows the code counts and percentages for the numbers of references in each category of stressors or resilience factors.

Regardless of illness severity, participants experienced pile-up of stressors (see Table 2). Only one couple in the sample (one in the Neither Severe group) did not mention pile-up. Twenty-six percent of references relating to pile-up came from individuals in the Neither Severe group. Many participants (42%) in the Arthritis Severe category discussed comorbidity. Emotional stressors were mentioned infrequently by participants who were in the Neither Severe group (6%), whereas they were mentioned by most subjects in the other three groups, with 42% of Emotional stressors referenced by those in the Both Severe group. As might be expected, the Both Severe group referenced a larger percentage of medical stressors (50%). In sum, for categories of stressor pile-up, emotional stressors, and medical stressors, a greater percentage of references came from the Both Severe group of patients (all stressor categories had 30% or higher frequency among this group).

Participants in the Neither Severe group reported a higher percentage of references related to unity and attitude than did couples in the other three groups (i.e., most resilience categories had 30% or higher frequency among the Neither Severe group). Those in the Neither

Severe and Arthritis Severe groups mentioned learning more often (31% and 46% respectively). Few references ($n = 4$) related to religious beliefs. In sum, codes of resilience processes were highest among the Neither Severe group.

Discussion

Informed by family stress and family resilience perspectives, this study examined aging couples' experiences in managing comorbid chronic illnesses. Managing multiple chronic illnesses is strongly related to couple relationships. As noted by Lee and Roberts (2018), an illness to one partner influences not only that person but also the other partner. Couples will adopt coping strategies requiring both partners to participate in lifestyle changes, which may raise the levels of stress the couples feel. However, managing one pre-existing chronic illness may promote resilient behaviors (Walsh, 1996), which may help couples cope with an additional chronic illness due to previous experiences. Findings from the current study indicated five types of stressors experienced by study couples, suggesting that comorbid chronic illnesses often lead to cumulative stress (e.g., pileup, illness interactions, emotional distress). Four types of resilience processes were reported by couples: positive attitude, couple unity, learning about illnesses, and faith beliefs. Results also suggested that stress and resilience connections depended somewhat on illness severity. Respondents reporting high severity in both diabetes and arthritis made fewer references to resilience processes.

Regarding stressors, findings from this study showed that illness comorbidity resulted in compounding stress, providing support to the ideas of stressor pileup (McCubbin & Patterson, 1982). Because diabetes and osteoarthritis are chronic, couples highlighted constant daily challenges associated with managing ongoing illness. In many cases, participants reported illnesses besides diabetes and osteoarthritis (which were the focus of the current study), requiring additional adaptive processes to manage these additional illnesses. Couples also noted the nature of additional stress from these multiple illnesses, whether due to taking multiple medications or financial costs of these treatments. The stressful nature of comorbid chronic illnesses is not completely unexpected. Previous research has pointed to the individual and spousal strain of comorbidity (Barnett et al., 2012; Thomeer, 2016). In line with findings in earlier research, symptoms and treatment of one chronic illness sometimes interact with those of other chronic illnesses (Bayliss et al., 2003). Some couples participating in the current study noted that arthritis limited the ability to exercise to control the diabetes. Couples also tended to prioritize resources to focus on the illness that has greater severity (Bratzke et al., 2015). About 58% of the couples experienced emotional distress (e.g., worry, discouragement) from navigating illness comorbidity, a finding that aligns with previous research (Thomeer, 2016). A smaller portion of the sample (23%) also reported ongoing medical-related challenges (e.g., financial cost of managing the illness, taking numerous medications, medical side effects). Having fewer financial resources may limit couples' ability to adapt to demands from these illnesses (McCubbin & Patterson, 1982), which may also compound feelings of stressor pileup. In short, stressors found in the current study confirm challenges reported in previous literature.

Patterns of resilience observed in this study also resonate with previous studies. Respondents reported maintaining a positive attitude, which has been found in other studies of

caring for a spouse with dementia (Donnellan, Bennett, & Soulsby, 2015). Couples' reports of unity in their relationships are congruent with couples coming together after a cancer diagnosis (Preau et al., 2011). This unity fits within the common dyadic coping strategy identified by Bodenmann (2005). Rather than providing occasional support to the ill partner, most couples in the current study treated the illnesses as a shared stressor event. The use of faith beliefs and practices, along with religious support found in the current study, also fall in line with resilience factors from earlier research (Peacock et al., 2017). Folkman (2008) observed that many people will turn to meaning-focused coping when problem-focusing or emotion-based coping fail to alleviate stress. This meaning-focused coping relies on a person's beliefs, values, and the meanings they give to events to provide them with motivation. This focus on meanings and their perceptions also fits well with the concepts that McCubbin and Patterson (1982) identified.

Although participants indicated they engaged in cognitive appraisal techniques, a portion of the couples described having to actively learn to cope with illnesses. For example, couples reported seeking out community resources (e.g., online, in-person classes) to increase their own and their spouse's knowledge of the health conditions. Seeking knowledge about health concerns has been found to be an indicator of resilience in previous research (Donnellan et al., 2015). This seeking out of knowledge also reflects an element of the supportive dyadic coping strategy (Bodenmann, 2005) because one partner may have sought information about an illness with the intention of sharing that information with the partner. Since the nature of stressors may change with age (e.g., Aldwin, Sutton, Chiara, & Spiro, 1996), couples may reappraise their coping strategies over time to adapt to new illness-related challenges that arise in late adulthood.

Perhaps the current study's greatest contribution is its analysis of resilience at varying levels of comorbid illness severity. Findings from this study help answer the question of whether higher stress is associated with higher resilience. Results linking stressors with resilience tended to mirror the state of the literature. Specifically, findings from high severity comorbid illness in this study and from the comorbidity literature suggest an emphasis on stressors, with little mention of resilience. Although some studies suggest resilience is possible in the face of increasing health symptoms (Iida et al., 2010), such resilience processes may decline as those demands reach very high levels.

Implications

Findings from this study have broad implications for clinicians who serve older couples with health challenges and specific implications for researchers who study these associations. There is an opportunity for existing health management clinics and educational classes to integrate content aimed at teaching couples how to support one another's health needs and decisions, thereby equipping couples with skills to increase resilience. Content on leveraging couples' interconnectedness can also help reduce marital distress and promote couples' overall functioning, which is especially beneficial for those who are not in marriage therapy. Furthermore, health professionals can offer in-person or online support groups to foster community connections among couples navigating comorbid chronic illnesses late in life.

In the future, researchers who study comorbidity and couples need to recognize there is a continuum of illness-related stress. At one time, researchers may have been able to rely on number of illnesses (e.g., comorbidity) as an index of severity, but a more precise measurement

will be needed to move the field forward. Furthermore, it may be that resilience processes are not static, but rather change over the course of illness progression. Future research could explore couple resilience processes prior to diagnosis, at diagnosis and during treatment, during remission or illness management phases, and as diagnoses are added. Essentially, development of resilience patterns across time and circumstances could be a rich direction for future study. For example, research might examine the resilience process over time within the ecological intra- and interpersonal process (EIIPP; Lee & Roberts, 2018), which process examines shared, patient only, and care partner stressors and resources. It also examines unique levels of stress for each partner, crossover stress from one partner to the other partner, as well as mutual and conjoint stress. This approach will also examine the resilience process from the perspective of the dyadic processes, which will greatly enhance current knowledge of managing multiple chronic illnesses for older couples.

Limitations

Couples who were recruited from diabetes management clinics and educational classes may differ in time, finances, or personality characteristics (e.g., conscientiousness in health behaviors) from those who do not seek treatment or education. Unfortunately, we did not ask respondents to report their incomes. However, responses to a question about whether their finances were sufficient for emergencies gave some indication of financial strain in the sample. Future research might give further consideration to how economic status and financial strain play into connections between stress and resilience. While selection bias may limit generalizability, the focus on this group of married couples helps advance knowledge about couples who are already taking steps to manage multiple chronic health conditions.

Spouses were interviewed jointly in this study. This methodological approach may have influenced the account of shared experiences rather than individual experiences. However, benefits of interviewing individuals together can help add to the richness of data in couple's experiences (see Bjornholt & Farstad, 2014).

Conclusion

Despite the fact that most couples exhibited some resilience processes, such processes appeared less often among those with self-ratings of high diabetes and arthritis severity and more often among those whose illnesses were less severe. Future research should address buffers of severe comorbid illnesses to better understand resilience responses to multi-morbidity.

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References

- Aldwin, C. M., Sutton, K. J., Chiara, G., & Spiro, A. (1996). Age differences in stress, coping, and appraisal: Findings from the normative aging study. *The Journals of Gerontology: Series B, 51B*(4), 179–188. <https://doi.org/10.1093/geronb/51B.4.P179>
- August, K. J., Rook, K., Franks, M., & Stephens, M. A. P. (2013). Spouses' involvement in their partners' diabetes management: Associations with spouse stress and perceived marital quality. *Journal of Family Psychology, 27*, 712-721.
- Barnett, K., Mercer, S. W., Norbury, M., Watt, G., Wyke, S., & Guthrie, B. (2012). Epidemiology of multimorbidity and implications for health care, research, and medical education: a cross-sectional study. *The Lancet, 380*, 37-43. [https://doi.org/10.1016/S0140-6736\(12\)60240-2](https://doi.org/10.1016/S0140-6736(12)60240-2).
- Bayliss, E. A., Steiner, J. F., Fernald, D. H., Crane, L. A., & Main, D. S. (2003). Descriptions of barriers to self-care by persons with comorbid chronic diseases. *Annals of Family Medicine, 1*, 15-21.
- Bjornholt, M., & Farstad, G. R. (2014). "Am I rambling?" On the advantages of interviewing couples together. *Qualitative Research, 14*, 3-19. <https://doi.org/10.1177/1468794112459671>
- Bodenheimer, T., Chen, E., & Bennett, H. D. (2009). Confronting the growing burden of chronic disease: Can the U.S healthcare workforce do the job? *Health Affairs, 28*(1), 64–74. doi:10.1377/hlthaff.28.1.64
- Bodenmann, G. (2005). Dyadic coping and the significance of this concept for prevention and therapy. *Zeitschrift für Gesundheitspsychologie, 16*, 108-111. doi: 10.1026/0943-8149.16.3.108
- Bratzke, L. C., Muehrer, R. J., Kehl, K. A., Lee, K. S., Ward, E. C., & Kwekkeboom, K. L. (2015). Self-management priority setting and decision-making in adults with multimorbidity: A narrative review of literature. *International Journal of Nursing Studies, 52*, 744-755.
- Centers for Disease Control and Prevention. (2014). National diabetes statistics report: Estimates of diabetes and its burden in the United States, 2014. Atlanta, GA: U.S. Department of Health and Human Services. <https://doi.org/10.3886/ICPSR09705.v2>
- Centers for Disease Control and Prevention. (2017). Osteoarthritis [Fact sheet]. <https://doi.org/10.1016/j.ijnurstu.2014.10.010>. Retrieved from <https://www.cdc.gov/arthritis/basics/osteoarthritis.htm>
- Corbin, J., & Strauss, A. L. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage. <http://dx.doi.org/10.4135/9781452230153>

- Daly, J. (2007). *Qualitative methods for family studies and human development*. Thousand Oaks, CA: Sage Publications. <http://dx.doi.org/10.1080/15267430701573607>
- Dorval, M., Guay, S., Mondor, M., Masse, B., Falardeau, M. Robidoux, A., ... Maunsell, E. (2005). Couples who get closer after breast cancer: Frequency and predictors in a prospective investigation. *Journal of Clinical Oncology*, *23*, 3588-3596. doi: 10.1200/JCO.2005.01.628
- Donnellan, W. J., Bennett, K. M., & Soulsby, L. K. (2015). What are the factors that facilitate or hinder resilience in older spousal dementia carers? A qualitative study. *Aging and Mental Health*, *19*, 932-939. <http://dx.doi.org/10.1080/13607863.2014.977771>
- Dunlop, D. D., Lyons, J. S., Manheim, L. M., Song, J., & Chang, R. W. (2004). Arthritis and heart disease as risk factors for major depression: The role of functional limitation. *Medical Care*, *42*(6), 502-511. <https://doi.org/10.1097/01.mlr.0000127997.51128.81>
- Fergus, K. D. (2011). The rupture and repair of the couple's communal body with prostate cancer. *Families, Systems, and Health*, *29*, 95-113. doi: 10.1037/a0023413
- Folkman, S. (2008). The case of positive emotions in the stress process. *Anxiety, Stress & Coping: An International Journal*, *21*, 3-14. doi: 10.1080/10615800701740457
- Helgeson, V., Jakubiak, B., Seltman, H., Hausmann, L., & Korytkowski, M. (2017). Implicit and explicit communal coping in couples with recently diagnosed type 2 diabetes. *Journal of Social and Personal Relationships*. *34*, 1099-1121. doi: 10.1177/0265407516669604
- Hemphill, R., Martire, L., Polenick, C., & Stephens, M. A. P. (2016). Spouse confidence and physical function among adults with osteoarthritis: The mediating role of spouse responses to pain. *Health Psychology*, *35*, 1059-1068. <http://dx.doi.org/10.1037/hea0000383>
- Idler, E. L., Boulifard, D. A., & Contrada, R. J. (2012). Mending broken hearts: Marriage and survival following cardiac surgery. *Journal of Health and Social Behavior*, *53*, 33-49. Doi:10.1177/0022146511432342
- Iida, M., Stephens, M. A. P., Rook, K. S., Franks, M., & Salem, J. K. (2010). When the going gets tough, does the support get going? Determinants of spousal support provision to type 2 diabetic patients. *Personality and Social Psychology Bulletin*, *36*, 780-791. doi: 10.1177/0146167210369897
- Johnson, D. R., White, L. K., Edwards, J. N., & Booth, A. (1986). Dimensions of marital quality: Toward methodological and conceptual refinement. *Journal of Family Issues*, *7*, 31-49. doi: 10.1177/019251386007001003

- Karantzas, G. C., & Gillath, O. (2017). Stress and wellbeing during chronic illness and partner death in later-life: The role of social support. *Current Opinions in Psychology, 13*, 75-80. doi: 10.1016/j.copsy.2016.05.009
- Keefe, F. J., Smith, S. J., Buffington, A. L. H., Gibson, J., Studts, J. L., & Caldwell, D. S. (2002). Recent advances and future directions in the biopsychosocial assessment and treatment of arthritis. *Journal of Consulting and Clinical Psychology, 70*, 640-655. <https://doi.org/10.1037//0022-006x.70.3.640>
- Klausner, E. J., Koenigsberg, H. W., Skolnick, N., Chung, H., Rosnick, P., Pelino, D., & Campbell, R. (1995). Perceived familial criticism and glucose control in insulin-dependent diabetes mellitus. *International Journal of Mental Health, 24*(2), 67-75. <https://doi.org/10.1080/00207411.1995.11449313>
- Lee, T. A., Shields, A. E., Vogeli, C., Gibson, T. B., Woong-Sohn, M., Marder, W. D., ... Weiss, K. B. (2007). Mortality rate in veterans with multiple chronic conditions. *Journal of General Internal Medicine, 22 Suppl 3*, 403-407. <https://doi.org/10.1007/s11606-007-0277-2>
- Lee, E., & Roberts, L. J. (2018). Between individual and family coping: A decade of theory and research on couples coping with health-related stress. *Journal of Family Theory & Review, 10*, 141-164. doi: 10.1111/jftr.12252
- Lee, W. C., & Ory, M. G. (2013). The engagement in physical activity for middle-aged and older adults with multiple chronic conditions: Findings from a community health assessment. *Journal of Aging Research, vol. 2013*, Article ID 152868, 8 pages, 2013. <https://doi.org/10.1155/2013/152868>
- Lehane, C. M., Elsass, P., Hovaldt, H. P., & Dammeyer, J. (2018). A relationship-focused investigation of spousal psychological adjustment to dual-sensory loss. *Aging & Mental Health, 22*, 397-404, doi: 10.1080/13607863.2016.1268091
- Lyons, B. P., & Levine, H. (2013). Physical symptoms, chronic and life-threatening illness trajectories among minority and aging populations. *Journal of Health and Human Services Administration, 36*(3), 323-66.
- Martire, L. M., Hemphill, R. C., & Polenick, C. A. (2016). Harnessing the power of the marital relationship to improve illness management: Considerations for couple-based interventions. In J. Bookwala (Eds.), *Couple relationships in the middle and later years: Their nature, complexity, and role in health and illness* (pp. 325-344). Washington, DC: American Psychological Association. doi:10.1037/14897-017
- Martire, L. M., Stephens, M. A. P., Mogle, J., Schulz, R., Brach, J., & Keefe, F. J. (2013). Daily spousal influence on physical activity in knee osteoarthritis. *Annual of Behavioral Medicine, 45*, 213-223. <https://doi.org/10.1007/s12160-012-9442-x>

- McCubbin, H. I., & Patterson, J. M. (1982). Family adaptation to crisis. In H. I. McCubbin, A. E. Cauble, & J. M. Patterson (Eds.), *Family stress, coping, and social support* (pp. 26-47). Springfield, IL: Thomas. <https://doi.org/10.2307/351680>
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco: Jossey-Bass. <https://doi.org/10.1177/0741713616671930>
- Noel-Miller, C. M. (2011). Partner caregiving in older cohabiting couples. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *66B*(3), 341–353. <https://doi.org/10.1093/geronb/gbr027>
- Novak, S. A., & Webster, G. D. (2011). Spousal social control during a weight loss attempt: A daily diary study. *Personal Relationships*, *18*, 224-241. <https://doi.org/10.1111/j.1475-6811.2011.01358.x>
- Peacock, S., Sethi, B., Williams, A., Duggleby, W., Bayly, M., Swindle, J., Ploeg, J., Markle-Reid, M. (2017). Older adult spouses with multiple chronic conditions: Challenges, rewards, and coping strategies. *Canadian Journal of Aging*, *36*, 209-222. doi: 10.1017/S0714980817000095.
- Preau, M., Bouhnik, A. D., Rey, D., Mancini, J., & ALD Cancer Study Group (2011). Two years after cancer diagnosis, which couples become closer? *European Journal of Cancer Care*, *20*, 380-388. doi: 10.1111/j.1365-2354.2010.01191.x.
- Price, S. J., Price, C. A., & McKenry, P. C. (2010). *Families & change: Coping with stressful events and transitions*. 4th Ed. Thousand Oaks, CA: Sage Publications, Inc.
- Roper, S. O., & Yorgason, J. B. (2009). Older adults with diabetes and osteoarthritis and their spouses: Effects of activity limitations, marital happiness, and social contacts on partners' daily mood. *Family Relations*, *58*, 460-474. <https://doi.org/10.1111/j.1741-3729.2009.00566.x>
- Rohrbaugh, M. J., Mehl, M. R., Shoham, V., Reilly, E. S., & Ewy, G. A. (2008). Prognostic significance of spouse we talk in couples coping with heart failure. *Journal of Consulting and Clinical Psychology*, *76*, 781-789. <http://dx.doi.org/10.1037/a0013238>
- Song, S., Graham-Engeland, J. E., Mogle, J., & Martire, L. M. (2015). The effects of daily mood and couple interactions on the sleep quality of older adults with chronic pain. *Journal of Behavioral Medicine*, *38*, 944-955. <https://doi.org/10.1007/s10865-015-9651-4>
- Thomeer, M. B. (2016). Multiple chronic conditions, spouse's depressive symptoms, and gender within marriage. *Journal of Health and Social Behavior*, *57*, 59-76. <https://doi.org/10.1177/0022146516628179>
- Trief, P. M., Ploutz-Snyder, R., Britton, K. D., & Weinstock, R. S. (2004). The relationship between marital quality and adherence to the diabetes care regimen. *Annals of Behavioral Medicine*, *27*, 148–154.

- Trief, P. M., Sandberg, J., Greenberg, R. P., Graff, K., Castranova, N., Yoon, M., & Weinstock, R. S. (2003) Describing support: A qualitative study of couples living with diabetes. *Family, Systems and Health, 21*, 57-67. <https://doi.org/10.1037/h0089502>
- Walsh, F. (1996). The concept of family resilience: Crisis and challenge. *Family Process, 35*, 261-281. <https://doi.org/10.1111/j.1545-5300.1996.00261.x>
- Wolff, J. L., Starfield, B., & Anderson, G. (2002). Prevalence, expenditures, and complications of multiple chronic conditions in the elderly. *Journal of the American Medical Association, 162*, 2269–2276. <https://doi.org/10.1001/archinte.162.20.2269>
- Wu, S., & Green, A. (2000). *Projection of chronic illness prevalence and cost inflation*. Santa Monica, CA: RAND.
- Yorgason, J. B., Booth, A., & Johnson, D. (2008). Health, disability, and marital quality: Is the association difference for younger versus older cohorts? *Research on Aging, 60*, 623-648. <https://doi.org/10.1177/0164027508322570>
- Yorgason, J. B., Roper, S. O., Sandberg, J. G., & Berg, C. A. (2012). Stress spillover of health symptoms from healthy spouses to patient spouses in older married couples managing both diabetes and osteoarthritis. *Families, Systems, & Health, 30*(4), 330–343. <https://doi.org/10.1037/a0030670>
- Yorgason, J. B., Roper, S. O., Wheeler, B., Crane, K., Byron, R., Carpenter, L., ... Higley, D. (2010). Older couples' management of multiple-chronic illnesses: Individual and shared perceptions and coping in Type 2 diabetes and osteoarthritis. *Families, Systems, & Health, 28*(1), 30–47. <https://doi.org/10.1037/a001939>