Self-Care Behaviors of Rural Women Post-Invasive Coronary Interventions

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Abstract

Purpose: Self-care is an essential component of secondary prevention of coronary artery disease (CAD) for rural women after undergoing invasive coronary interventions (ICI). The purpose of the study was to describe self-care behavior experiences of rural women with CAD post-ICI. The specific aims were: to identify and describe self-care behaviors initiated by rural women post-ICI; and to identify and describe barriers to and facilitators of self-care behavior adoption. The language used to describe self-care can be different between health care providers, who are guided by the American Heart Association (AHA), and rural women whose descriptions are based on their life experiences.

Methods: Qualitative descriptive methods were used to purposefully sample women (N=10) from two rural Arizona counties. Data were collected using semi-structured face-to-face interviews, lasting approximately 25minutes. Atlas.ti Mac Version 1.5.2 (462) was used for data analysis.

Findings: Aim 1: Healthy diet was the most common self-care behavior described by rural women. When describing self-care behaviors, rural women used a different language, which was in

alignment with AHA guidelines for self-care behaviors. Aim 2: Themes identified and described for barriers were: residential environment, health and physical ailments, family conditions, and personal characteristics; and for facilitators were relationships, available resources, and personal outcomes.

Conclusions: Regardless of poor health-promoting environment, such as unavailability of fresh food stores and access to exercise opportunities rural women took advantage of what they had to keep healthy. They performed self-care behaviors that they described as good for their health and made them happy without associating them the expected self-care behaviors to prevent reoccurrences and complications post-ICI. Rural health care providers must recognize these challenges, acknowledge the positive assets wihin rural women, and incorporate them into the programs for self-care behavior modification strategies.

Keywords: self-care, rural women, coronary artery disease, invasive coronary interventions

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Cardiovascular diseases including coronary artery disease (CAD), hypertension, and stroke are the leading causes of death in the United States and accounted for one in three deaths in 2015 (Benjamin et al., 2017). Further, deaths are more frequently attributed to CAD with higher numbers and increased burden among rural women (Benjamin et al., 2017; Havraneck et al., 2015). Treatments for CAD include: (a) invasive coronary interventions (ICI) defined as percutaneous coronary intervention (PCI) including balloon angioplasty with or without stent placement, and (b) coronary artery bypass graft (CABG). After undergoing ICI, secondary prevention measures are important to avert reoccurrence. Many of these measures are not equally accessible to patients, especially to those living in rural areas. Self-care is an essential component of secondary prevention of CAD post-ICI; however, it is often inaccessible for rural women due to geographic

health disparities and lack of care coordination post discharge (Cudney et al., 2005; Kim et al., 2013; Kitzman et al., 2017; Slusher et a., 2010). Post-ICI rural Arizona women in Cochise and Pinal Counties are sent home; which can be 30 miles or more from the nearest cardiology service. There is an assumption that patients will adopt required self-care behaviors according to the American Heart Association's (AHA) secondary prevention guidelines (Smith et al., 2011).

Health disparities exist related to gender, socioeconomic status, and geographic inequalities and have been documented in the literature (Crosby et al., 2012; Cudney et al., 2005; Lauckner & Hutchinson, 2016; Ruiz-Perez et al., 2019). These inequalities contribute to the lack of opportunities for rural women to engage in disease-specific self-care behaviors essential for secondary prevention post-ICI (Turnbull et al., 2020). Cardiovascular disease risk factors (e.g., high cholesterol, smoking, high blood pressure, obesity, diabetes) are prevalent in rural areas and must be controlled through self-care to prevent adverse CAD outcomes (Crosby et al., 2012; Fahs et al., 2013). Distance, for instance, was found to be interwoven in most of the contextual inequalities and to have a negative impact on rural women's ability to manage chronic illnesses (Ruiz-Perez et al., 2019; Sullivan et al., 2003; Winters et al., 2006).

Despite these well documented health disparities, there are no studies that provide descriptions of rural women's perspectives on secondary prevention measures for CAD; specifically, self-care behaviors post-ICI. The purpose of this study was to describe self-care behavior experiences of rural Arizona women with CAD post-ICI. The specific aims were to: (a) identify and describe self-care behaviors initiated by rural women post-ICI, and (b) identify and describe barriers and facilitators of self-care behavior adoption.

The U. S. Census Bureau (n.d.) reports that twenty-eight million women age 18 and older live in rural areas or frontier, and an estimated five million of these women are 65 years and older.

The state of Arizona's definition of rural was used for this study. Which is a county with a population less than 400,000 persons and a census county division with less than 50,000 persons in a county with a population of 400,000 or more persons according to the most recent United States decennial census (Arizona Department of Health Services [ADHS], Office of Health Systems Development n.d.). Most of the small towns within Arizona counties have populations less than 50,000 persons, allowing them to qualify as rural for this study.

The AHA defines cardiovascular health as the absence of clinically manifest cardiovascular disease together with the simultaneous presence of optimal levels of health factors (e.g., lipids, blood pressure, blood glucose) and health behaviors (e.g., healthy diet patterns, physical activity, non-smoking, appropriate energy intake) (Eckel et al., 2014). This study was conducted with rural Arizona women with CAD post-ICI. The definition of self-care was derived from AHA, which included attending follow-up appointments where their health factors were checked and taking actions if symptoms reoccur. Thus, self-care was defined as the ability of rural women to independently and purposefully initiate and adopt the following behaviors to promote and maintain cardiovascular health: cease smoking, adhere to heart healthy diet, incorporate physical activity in their daily routines, monitor their blood pressure and blood glucose levels regularly, adhere to medical regimen, and follow up with their clinician as required or access health care in a timely manner if symptoms reoccur (Eckel et al, 2014; Smith et al., 2011).

The theoretical perspective for this study encompassed Dorothea Orem's self-care deficit nursing theory (Taylor et al., 2000); rural health theory (Long & Weinert, 1989) and the social determinants of health framework (Havraneck et al., 2015). Self-care deficit nursing theory and the rural health theory account for the personal responsibilities individuals have for self-care and human and environmental conditions that exist during the process of caring for self (e.g., self-care

demands, health beliefs, culture and social networks). The social determinants of health help acknowledge the social and economic systems that are in place for rural women to be successful when taking care of themselves (e.g., available resources and socioeconomic position).

Methods

This study used qualitative description (QD) design, which was the optimal choice for description of behaviors and experiences without making judgement (Sandelowski, 2010). Qualitative description design allowed straightforward basic descriptions of self-care behaviors as reported by rural women with minimal theorizing compared to other methods such as grounded theory. The study was reviewed and approved by an Institutional Review Board for human subject research at the University of Arizona, protocol number 1606621792.

Settings

The State of Arizona has 15 counties; 13 are classified as rural and are where 25% of the Arizona's population reside (ADHS, 2019). Cardiovascular disease was the leading cause of deaths in Cochise County (population 129,099) and Pinal County (population 430,799). In Cochise County 18.1% and in Pinal County 15.5% of adults live below the poverty level. In Cochise County 18% and in Pinal County 20% of residents have no health insurance. Travel time by helicopter to the nearest advanced cardiac care setting is 45 minutes to an hour from Cochise County and an hour and 15 minutes from Pinal County (ADHS, 2019).

Sampling

Purposeful sampling was used and continued until data saturation occurred. Theme saturation was identified through concurrent transcription and review of interview data throughout the data collection phase. Women were included in the study if they were: (a) at least 30 days, and no more than six years post procedure; (b) 35 years and older; (c) spoke and understood English; and (d)

willing to participate in a face-to-face, voice-recorded semi-structured interview lasting for approximately 60 minutes. Women were excluded if they: (a) had a cognitive impairment, (b) were dependent on others for their care, or (c) were institutionalized in a long-term care facility. Cognition was deemed impaired if the woman was unable to verbalize understanding of the purpose of the study and unable to provide written informed consent (Rosenfeld et al., 2015).

Recruitment and Data Collection

Rural women were recruited from the cardiac clinics using direct contact by speaking to them and/or giving them recruitment flyers during office hours. The research team received permission from the office manager for the primary investigator to hang out at the clinics. Those who verbally agreed to participate were screened right away. Nine of the women who qualified were interviewed immediately in a private room; one woman was interviewed in her homes at her convenience. The study was explained in detail to each prospective study participant, and the consent form was explained line by line. Women were given the opportunity to ask questions or withdraw prior to signing the consent. The primary investigator collected both the demographic and clinical information, and conducted face-to-face, semi-structured interviews that were voice recorded.

An interview guide was used to conduct the semi-structured interviews. The interview guide was created based on the definition of self-care for the study, which was derived from the AHA guidelines to maintain cardiovascular health. The same grand tour opening statement was used with each rural woman:

> I am interested in how rural women who had some type of cardiac treatment take care of themselves after they return home. Please talk freely while you explain to me your self-care experience. After you finish, I may ask questions to clarify some things.

The remainder of the interview flowed freely depending on the responses to this first question. Subsequent questions were asked to verify, clarify, and amplify the self-care behavior experiences the rural women described during the interview. The interviews lasted an average of 25 minutes.

Data Analysis Strategies

Demographic and clinical information were transcribed into a Microsoft Excel spreadsheet, and voice-recorded interviews were transcribed into a Microsoft Word (MS-Word) document within a week after each interview. Information obtained during the interview was encrypted and password protected to protect participants' information. All written memos about the design and analytic coding, categorizing and data comparison decisions were de-identified, then saved as part of an audit trail (Lincoln & Guba, 1985).

Lincoln and Guba's criteria to evaluate the scientific rigor and trustworthiness of the study were used. The *truth value and credibility* were attained through prolonged engagement (six months) in rural Arizona with on-site participants interviews, the iterative process between data collection and data analysis, and frequent de-briefings with other research team members with long-standing histories working in small rural and frontier communities in the southwestern U. S. and Arizona. (Lincoln & Guba, 1985). *Applicability* in QD is ensured throughout the process of data collection and data analysis by thick description including sample specifics and characteristics. *Consistency* was ensured by keeping audit trails of the decisions made throughout the study about the design and analytic coding, categorizing, and data comparison, which are available for peer review. *Neutrality* refers to the freedom from bias, which was maintained by bracketing and establishing auditability during data collection and data analysis. *Confirmability* was achieved through truthful representation of rural women's self-care behavior experiences.

During the semi-structured interview, participants were asked for clarification if there was any misunderstanding.

Data analysis started with theoretical coding. After the first three interviews were transcribed and a 90 percent of inter-coder reliability was achieved with one other team member, a codebook was established with unique definitions for the identified larger codes. Open coding was then done within each of these larger codes. Relevant patterns, interactions, and connections emerged in the succeeding interviews to achieve saturation (Bell et al., 2005). Discussions between the primary investigator and two other team members occurred to verify and validate the themes and categories identified and to also ensure credibility. Saturation was achieved with ten interviews. Atlas.ti Mac (Version 1.5.2), qualitative research software was used for data manipulation and management.

Findings

The study was comprised of ten rural women ranging from ages 56 to 88 years, with a mean age of 77.6 years. Nine women were from Cochise County and one woman was from Pinal County. Seven women had a stent placement procedure and the other three had coronary artery bypass grafts (CABG). Two women were six years post CABG, two were six years poststent. Two women were five years poststent, one was three years post CABG, and three were more than three months but a year or less poststent.

Descriptions of Self-care Behaviors of Rural Women

The experiences of the study participants with six self-care behaviors were explored: (a) cease smoking, (b) adhere to heart healthy diet, (c) incorporate physical activity in their daily routines, (d) monitor blood pressure and blood glucose levels regularly, (e) adhere to medical regimen, and (f) follow up with their clinician as required or access health care in a timely manner if symptoms reoccur. Only two self-care behaviors elicited themes (Tables 1 and 2): (a) adhere to

a heart healthy diet, and (b) incorporate physical activity in their daily routines. Table 3 presents the participants' experiences relative to the remaining four self-care behaviors.

Adhere to a Heart Healthy Diet

Four main themes emerged for heart healthy diet: (a) access to heart healthy food, (b) food I am supposed to eat, (c) eating to feel good, and (d) eating for other health issues. See Table 1.

Lack of Access to Healthy Food. All women reported having access issues – both shopping and/or travel challenges. Three women reported they had to travel more than 20 miles or 25 minutes to two hours to the grocery store or food market. One woman drove 10 miles every day to the market to buy groceries, and she said she also wanted to get out of the house. Some women took trips to the food market or grocery store once or twice week, whereas for others it was once a month to go buy fresh vegetables. Some reported waiting for their daughters to go shopping with them or to bring and prepare food for them.

Eating as I'm Supposed To. Regardless of poor access to healthy food, rural women in this study continued trying to eat food they thought they were supposed to eat post-ICI. They also reported that they ate healthy, watched what they ate, avoided food with fats or a lot of lard, did not eat processed foods, and avoided salt.

Eating to Feel Good. Whatever rural women chose to eat, even though some of it was considered heart healthy, they mentioned their choice as being for their overall feelings of health and happiness. They ate whatever they liked and whatever made them feel good and happy.

Eating for Other Health Issues. Several women mentioned either avoiding or not following heart healthy diet because it made symptoms of other health conditions worse. The health issues frequently identified by these women were stomach problems (3 women) and diabetes (3 women).

Table 1

Themes and Participants' Quotes Representing Adhere to a Heart Healthy Diet

Themes	Participants' Quotes
Lack of access to healthy foods	"We go to (town) which is 20 miles from our home to buy food from the market. In (nearest town) or (hometown), they don't have no market. At least one time a week, but we usually go two times a week." …but I like to eat salads, but I don't get the opportunity every day to eat salads because I go to the grocery store once a month. Either (town) 34 miles or (town) 92 miles, where I get everything I need once a month. So I get all the fresh vegetables, then the first two weeks I got fresh vegetables and then the last two weeks I do not have any. "I go to (town) which is like 10 miles from here, like almost every day to the store to buy meat, lettuce, tomatoes, and all kinds of vegetables and just to get out of the house."
Eating as I'm supposed to	I am not supposed to eat a lot of carbohydrates; I am not supposed to eat like potatoes. Those will kill you, but I like potatoes. I can eat potatoes, but I will eat a little one, not a whole big potato. But if we go out to eat, I will eat half a potato instead of a full serving. I haven't been watching what I eat lately, because I hardly eat because I am still like I am in a dream. I can't believe he passed away. Well, tacos, tostadas, tortillas, beans and bread. I shouldn't because I am a diabetic too. But I eat salads, a lot of salads. I make stuffed cabbage, I don't know if you have ever heard of hamburger pie, I don't use lard or shortening. Now I am using avocado oil. I am supposed to eat one bread or one tortilla a day, but I don't really follow that well.
Eating to feel good	"I eat everything. My daughter did everything for me. Even the cooking, she put me on a diet. Good diet." I was eating very well, very healthy. Just to watch my eating habits, and I feel healthy. We, my husband and I, were always watching our food and the way we were eating. When we purchase meat, we look for meat that is not with a lot of fat on it. Even if it is a little higher in price, we buy it because we want to buy for our health. We eat a lot of vegetables, some carbohydrates, and no fats. Remove all the fats in the meat, even if we eat poultry, we remove all the skin and all the fat that we can see. "Generally, at my age I get whatever I want to get. I get one of those chocolate things in a package."
Eating for other health issues	***For Stomach problems:*** I try not to eat like for example, chili. I avoid chili for my stomach. I don't drink orange juice for example, to avoid acid. I don't eat lemon. On my own, the doctors haven't told me not to do that. I do that on my own and it is working fine. But I do not eat bread, just very little bread. Because if I don't do much exercise and I keep eating bread and a lot of carbohydrates, I will be like this. Yes, I will gain weight, a lot of weight. So, I try not to eat many or much carbohydrates. ***For Diabetes:*** Today my blood sugar was too high; it was 250. I quit eating stuff that I am not supposed to eat. I don't eat no more potato chips or candy so it starts coming down. And this morning I only ate one slice of bread and no more. I am supposed to eat one bread or one tortilla a day, but I don't really follow that well.

Incorporate Physical Activity in Daily Routines

When asked about incorporating physical activity in their daily routines, seven of the rural women in this study reported walking and normal or routine housework as their main form of physical activity and three women mentioned house work as their only form of activity. Participants who had open-heart surgery reported having restrictions on physical activity for a few weeks or months; however, those who had stents reported that they rested for few days before resuming their walking or routine housework. Although they reported going back to normal housework routines, they could not perform the heavy housework they had done before the procedure.

Table 2

Themes and Participants' Quotes for Incorporate Physical Activity in Daily Routines

Themes	Participants' Quotes
	Post Stent
Walking	"I just walk. That's what I do every afternoon, I walk two blocks. I use to do exercises in the house with a walker (demonstrate with her feet kicking forward and moving legs and arms). By that time, I could not walk."
	I walked every day, no, almost every day through Wal-Mart. I walked through that for an hour. Yes, that is what I do, at least a mile. I use to do it every day but now I am getting lazy and I got tired of doing it. So, I do it every like twice this week. Well, I am old. I am older than dirt. I will be 88 years next month and that is old. But anyway, I enjoy walking most of the time. Sometimes I get bored with it. And I will walk when I go grocery shopping with my daughter. It is more like four times a week that I walk.
	...I walk to the mail box and back and go shopping, I go to the Wal-Mart and walk all over that big store. I do not do any regular exercise other than that. But to the store down here, yes, I do a lot of walking around the stores, because I never know where they have everything.
	"I walk, in the morning I get out and walk and do exercise. Once a day I walk in the park."
	I live on a hill, and it is really steep. So now every morning and every evening I have to go up and down that hill to close my gate. So, for me that's exercise because it makes my heart pump really fast and hard. Twice in the morning and twice in the evening.
	Post CABG:
	I just waited for three months, and I started again. Working, walking, and doing the best I could. But my exercise at home wasn't as bad, because I did not do very heavy stuff. I just did my regular normal meals and that's about it. I did not wash the windows or anything like that. Before I was able to do them.
Normal housework	"I clean house, I make beds and clean house, mop, and I only have a little bit to mop the rest is all carpet."
	I rested for about two days and then I got back to my normal routine. I usually get up about between six and seven. At that point I let the dogs out, turn off the alarm, and then make my breakfast, turn on the news while I eat my breakfast, read something until eight o'clock when I get my son up. And then if I have to do laundry, I will do laundry and clean. And then I just go on with what I have to do. I crochet, I embroider, and then I have my flowers outdoors.
	Post CABG:
	"I did not do anything for a couple of months, then I started doing things. Not heavy things or anything like that. My housework, everything that a wife does. Cooking, vacuuming, laundry and checking stuff."
	"I just rest and do not do heavy work now, beside my age, which is now 81 years old; I try not to do heavy work on my own."

Other Self-Care Behaviors

Rural women had to be prompted to discuss how they adopted these lifestyles behaviors. Themes did not emerge from this questioning; rather participants described their experiences with these recommendations post-ICI.

Cease Smoking. Seven women had never smoked. Three women were former smokers; however, they reported they knew smoking was not good for them.

Monitor Blood Pressure (BP) and Blood Glucose (BG). Participants reported that they may or may not check their BP or their BG. All of those with diabetes (five) and some of those without diabetes checked their BG. They reported knowing what to do with the readings, such as eating something sweet or taking a blood pressure pill. Some of those with high blood pressure did not check their blood pressure until it was checked during their clinician office visit.

Adhere to Medical Regimens. None of the participants reported any problems with their medications. They took their medications as their clinicians required, even though most of them did not remember the name of their medications.

Follow up with Their Clinician as Required or Access Health Care in a Timely Manner if Symptoms Reoccur. All participants had a follow-up appointment scheduled after their procedures. Staff at their clinician's office called to remind them of the appointment the day before. Regardless of the distance and travel time to the clinician's office, which ranged from two miles (5 minutes) to 72.4 miles (1 hour and 20 minutes) drive, all participants kept their appointments. When symptoms reoccurred, most of the women in this study would first call a family member and instruct them to call 911 or to take them to the hospital.

Table 3

Self-care Behaviors and Participants' Quotes

Behaviors	Participants' Quotes
Cease smoking	"….it took me about a year to finally quit smoking. And me quitting smoking was the best thing, and it was hard."
Check blood pressure	…high blood pressure? I have low blood pressure. I am taking lisinopril. Right now, when they checked at the doctor's office, he said I have 134 over sixty something. So that was good. Sometimes I have my husband check. I don't check it all the times. If it is low, I sit down and take it easy for a little while. If it high, I do the same. You know you just have to take it easy when you get as old as I am.
Check blood glucose	Maybe four times a month. It depends on how I feel. If it goes up, I take an extra blood pressure pill. Yes, I do. I check it (BG) before breakfast, before lunch, before dinner, and then I check it at bedtime. That way I, because I am on a sliding scale. This morning it was 166, so I took six units. I check my blood sugar, and when it high, I give myself a shot, and it doesn't bother me…. it just depends on where I shoot it. Sometimes it bruises, sometimes it does not. I usually have low blood sugar, so I have to eat a little sweet in the morning to get it high and a little off. Yes, in the mornings. This morning it was 74, but one time I had it lower than that. I don't remember right now, I should have brought my book, but it is usually low and, in the evening, it gets high if I eat anything that I am not supposed to eat. …I check my blood sugar once in a while because for a while they said I had diabetes, I think for about three years I was on metformin and lisinopril. And I took my test every morning, and it was hardly ever 100. It was like in the 80's and 90's sometimes in the 70's. Once in a while it will be a little over a 100, maybe a 108 or 107. So, I took that and showed it to my doctor, and he said I don't need to take medication anymore then. So, but even so, that has been about a year ago I guess, or nine months. But I check it once in a while. I checked it two days ago, and it was a 100. So, I keep track of that. If I eat little sweets, I go check it again. I don't want to tell you what it is. It was a 120 one day when I had a lot of other stuff, and I said to myself I better not do that. I take care of myself.
Medical regimen	"Yes, it is a lot of pills. I take them every day. My daughter fixes everything for me, morning or noon or night." Yes, I take six different pills from my doctor's prescription, and I feel okay, I feel happy. Because I am taking my pills regularly, I feel great. Now I am taking two pills of vitamins. Before I was taking only one a day. Then I read a label and they say two pills a day. Now I am taking two, one in the morning and one in the afternoon, and I am feeling much better now. Yes, multivitamins because now I am taking two pills a day instead of just one.
Follow-up	I always keep my appointments. But I got late today, and I don't know why I am late, really. And now we are 15 minutes late he cannot see me. I said I can wait to see if he can take me later right before lunch or right after lunch, but he said no. Well there is a (name of clinic) in (town) 20 miles. I have been several times in this (name of clinic) instead of going to see a doctor 20 miles away or 50 miles away.
Access care	"I know when I had my first heart attack, my husband drove from our house to this hospital in 4 minutes. Because we knew he would be faster than an ambulance." "Yes, my daughter will take me to the doctor…. an emergency or you have chest pain….I call my daughter." "I tell my son, he either calls 911 or he takes me to the hospital."

Self-care Behavior Barriers and Facilitators

These were situations that prevented or enabled rural women to perform self-care behaviors. Rural women in this study described these conditions as part of their life not as something that will pass and were appreciative of what they had.

Barriers to Self-care

Barriers were defined as anything that prevented participants from initiating and performing self-care behaviors. Four themes where identified: residential environment, health and physical ailments, social conditions, and personal characteristics. See Table 4 for themes and participants' quotes.

Residential Environment. Examples of built and natural resources in neighborhoods include safe public spaces for physical activity, affordable housing, and availability of healthy food options, local emergency and health care services (Havranek et al., 2015). Eight women described unavailability of amenities such as emergency health services and food markets for fresh fruits and vegetables as barriers to self-care behaviors. For example, the ambulance personnel had a hard time finding one woman's house when she called because of her rural address. Also, three women described the distance from healthcare facilities prevents them from participating in self-care behaviors. Food deserts and distance to the market were both identified as barriers to eating fresh fruits and vegetables.

Health and Physical Ailments. Participants described the physical conditions and health symptoms that prevented their eating a heart healthy diet, taking medications, or engaging in physical activity. Specific conditions mentioned as barriers to walking included: five women, tiredness; two women, arthritis; one woman, heart failure; three women, diabetes; and three women, stomach problems.

Family Conditions. Participants reported that relationships with their daughters, husbands, and sons were barriers to self-care. Six of the women reported some type of family issue preventing them from doing self-care behaviors. They reported that their family members were watching over them preventing them from doing self-care behaviors or activities they did before the procedure, especially physical activity.

Personal Characteristics. Participants reported that their own individual preferences were barriers to self-care. The words participants used towards certain self-care behaviors revealed the attitude they had towards those behaviors and prevented them from doing them. For example, participants reported their age accompanied by forgetfulness as part of why they were not doing certain self-care behaviors, such as forgetting appointments or taking their pills.

Table 4

Themes and Participants' Quotes Representing Barriers to Self-care

Theme	Participants' Quotes
Residential environment	I know when I had my first heart attack, my husband drove from our house to this hospital in four minutes. Because we knew he would be faster than an ambulance. We have a county address, but we are right outside the city limits, and they have had trouble finding us. And we have private health facility that opened there, and they are the ones that are building that emergency. If you get sick between 8 in the morning and 5 in the evening you can go there, but after that forget it. If we need emergency care, we either go to nearest town 25 miles away with emergency health services or the next nearest town about 52 miles away. Coming into counseling, which would be (town) 92 miles, we just don't have the funds to keep driving back and forth. I started rehabilitation on my back, so I can start exercising and all that. I only did it once, and they wanted me to do it three times a week, and I said I couldn't afford it. I do not get the opportunity every day to eat salads because I go to the grocery store once a month. Which is either (town) 34 miles or (town) 92 miles, where I get everything I need once a month. So, I get all the fresh vegetables and the first two weeks, I got fresh vegetables and then the last two weeks I do not have any.
Health and physical ailments	Before I used to do more exercise because I was walking, doing the laundry, cleaning, and now I just do a little only because I get tired. This tiredness affected me because I do something I feel like, argh, I am weak and tired. The next thing I cannot do that. I get out of breath very easily, and I get tired very easily and quickly. I was doing a lot then. But I mean I still do, but I do not vacuum anymore, my husband does that. But I still do everything, I just get tired, more tired than I used to.

	"It is hard, because I have rheumatoid arthritis, no, osteoarthritis in my back, so my exercise is limited. I am in a lot of pain. I have a lot of issues with my back so my exercise has been limited."
	"Metformin I take two a day, sometimes I take four because he (the doctor) said my blood sugar was really high. Once a week I drink four a day because it gives me diarrhea really bad."
	I do not want to eat. There are so many things; I have a problem with diarrhea. And I love different kinds of food, but I cannot have them, they give me diarrhea. I cannot eat green vegetables because they give diarrhea. So, I do not eat healthy.
Family conditions	I have had a lot of problems with my mother and my blood pressure went up. And my son doesn't like to walk. He cannot walk slowly. He has to walk really fast. I have an artificial ankle, and I do not like to walk fast.
	"And my husband had a stroke, and I had to take care of him for like 13 years, and lately I could not leave him alone. And that cut into my walking."
	…my exercise, but my exercise at home was not as bad because I did not do very heavy stuff. Because I had my husband watching over me all the times. But somebody has to tell me what to do with my husband. Because he stresses me out….
Personal characteristics	"I hate them, I hate taking pills because it is a waste of time. Just to sit there and pop pills into you. So, I do not like to do that, half the time I do not do it. I am still alive that is all that matters to me."
	She gave me something I did not go for, and I told her I will not take that so just do not give it to me. That is the way I am. My husband says I like to talk a lot, but I like to let them know that I am not going to drink anything that I do not like.

Facilitators of Self-care

Facilitators are defined as anything that enabled study participants to initiate and perform self-care behaviors. Three themes were identified: relationships, available resources, and personal outcomes. See Table 5 for themes and participants' quotes.

Relationships. The participants reported on the behaviors of their family, friends, and neighbors related to their recovery. Eight women reported that their family provided the primary support that facilitated self-care behaviors, and friends and neighbors were available to help each other out. Six women reported that their daughters and seven women reported that their husbands were especially supportive with dietary adherence, medications, and health care professional's appointments or calling 911 if symptoms reoccur. In their own words they reported: "my daughter helped me" or "my husband took good care of me" or "I am lucky to have family I have."

Available Resources. Some participants described the structural factors within their neighborhoods that were accessible. Four women described how helpful it was that staff at their

cardiologists' offices called them the day before their appointment to remind them. Three women reported that going to church was helpful, and two women reported that they used department stores for physical activity.

Personal Outcomes. Participants described the feelings they had after they did their self-care behaviors and how these feelings motivated them to do those behaviors again. Three of the women reported doing physical activity because they enjoyed doing it. For all other self-care behaviors, three of the women reported feeling good, feeling better, or feeling happy, and four women reported feeling relaxed and stress-free after performing their self-care behaviors.

Table 5

Themes and Participants' Quotes Representing Facilitators of Self-care

Theme	Participants' Quotes
Relationships	As a matter of fact, I am lucky, I am really lucky to be alive, to have the family that I have, and there was a lot of friends. Everybody was great. So, it really helped. My daughter would not let us go to hometown (after the procedure). She said she is one hour away from town with advanced medical care, if something happens, bingo!! They are great. Every time I have an appointment in town with advanced medical care, my daughter takes time from work to go with us. I go grocery shopping with my daughter. My daughter helps. My daughter is always there for me. She lives quite a ways from me. My daughter takes me to the doctors all the time. I have good neighbors, they do not bother me, they do not come to my house or anything. Well, (name of neighbor) does once in a while, but it is ok. My son comes in from (the city); he is a pharmacist. He comes over and makes me three weeks at a time (of the pills). He fills my little cubbyholes with them. We have good neighbors we help each other, so we just kind of help each other out there. If my neighbor over there needs help, we go and if we need help, they come over. I am very spoiled. The pharmacist that I take my medications from lives out by our house. So, he fills them in (town, 92 miles away), and he drops them off at my house so I do not have to go there. I am just lucky that he is a good friend of us, so he drops them off.
Available resources	They have somebody schedule them for me, and they call the night before to make sure you are here the next day. Like (the cardiologist's) medical assistant called me and told me I have an appointment. I said 'no I do not.' She said 'Yes you do.' Because sometimes we forget, I always tell them to call me the day ahead, whoever it is, whether is the dentist or whatever. "I walk a good mile between the (department store) aisles. I chose the ones that people are not in. I walk inside because I use the cart to walk. I have to use that cart now to balance myself."

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Theme	Participants' Quotes
Personal outcomes	"Yes, I take six different pills from my doctor's prescription, and I feel okay, I feel happy. Because I am taking my pills regularly, I feel great."
	"It makes me feel really good. I have always ridden, and it just makes me feel like I am free, and I do not worry about nothing except riding my horse. It just clears my mind."
	"I eat well, rest well, socialize normal, and I am ok."

Discussion

For this study, self-care was defined as the ability of rural women to independently and purposefully adopt these behaviors to promote and maintain cardiovascular health based on AHA guidelines. These included: adhere to heart healthy diet, incorporate physical activity in their daily routines, cease smoking, monitor blood pressure and blood glucose levels regularly, adhere to medical regimen, and follow up with the health care professional as required or access health care in a timely manner if symptoms reoccur. However, rural women in this study had different descriptions of self-care behaviors and why they did what they were doing when they got home post-ICI. Understanding the self-care experiences of rural women post-ICI is crucial in implementing secondary prevention measures to improve outcomes and reduce the disparities. The American College of Cardiology guidelines recommend CAD preventive measures and interventions that are culturally acceptable for individuals (Eckel et al., 2014; Goff et al., 2014).

Studies have indicated that living in rural areas, plus other sociocultural factors affect rural women's ability to manage chronic illnesses such as CAD. (Sullivan et al., 2003; Turnbull et al., 2020; Weinert et al., 2008). Rural women's clear understanding of the specific actions to take and resources available to promote self-care can have a positive influence on adopting behaviors post-ICI. Rural women in this study reported doing everything they did before undergoing treatment for CAD post-ICI. They reported they were not told to do any specific actions during discharge instructions. When asked what they did to take care of themselves, they discussed what they normally did, especially choosing foods that are good for them and walking plus their normal

house routines to keep active. They needed to be prompted to talk about taking their medications, checking their blood pressure and blood sugar, and following up with their clinicians. These findings indicate that when working with rural women, the scientific definition of self-care behaviors must be delineated from the perspective of rural women during discharge instructions post-ICI.

AHA defines a heart healthy diet as a daily serving of fruits and vegetables, whole grains, lean meats, and fat-free or low-fat dairy products (Van Horn et al., 2016). Even though these rural women did not mention eating for their heart health, instead for their overall health, the descriptions of their food choices are consistent with AHA's heart healthy diet. These rural women reported eating what they thought they were supposed to eat, not what they knew they were supposed to eat. For example, they reported that they ate low-fat low-salt food choices and ate fresh fruits and vegetables every opportunity they could. These findings are also consistent with the findings from the Cudney et al. (2005) and Perry et al., (2008) studies. To encourage and motivate rural women with CAD post-ICI, their dietary programs must be clear and specific, highlighting foods that are culturally acceptable for them and that are heart healthy.

Researchers reported that geographic location exposed rural dwellers to limited health care services; however, based on their tendency to maintain a positive attitude towards life, they often did not perceive geographic challenges as problematic (Brundisini et al., 2013; Pierce, 2005; Sullivan et al., 2003). Rural women in this study traveled an average of 20 miles each way to the grocery store for fresh fruits and vegetables. This travel distance supports the findings from the Kim et al. (2013) and Slusher et al. (2010) studies that estimated 10 miles or more distance to the grocery store in their studies. Regardless of this distance challenge, rural women in this study and

in the Kim et al. and Slusher et al. studies did not report distance as a problem or obstacle to eating as they were supposed to eat.

Rural women in this study indicated that they performed activities that were part of their daily lives, easy, and enjoyable; however, depending on the type of procedure they had, they avoided strenuous chores a few days or a week post-ICI. These findings are consistent with what is in the literature (Slusher et al., 2010; Sullivan et al., 2003). The recommendations for physical activity are that adults should have 150 minutes of moderate activity per week or 75 minutes of vigorous activity per week (U.S. Department of Health and Human Services, 2018). Walking and returning to normal housework and routines were the most common forms of physical activity for these rural women. Also recommended, is that adults with chronic diseases who are unable to meet the activity guidelines must avoid inactivity by engaging in their regular physical activities according to their abilities.

Rural women in our study reported using department stores like Wal-Mart as being resourceful for physical activity, especially to walk up and down the air-conditioned aisles during the Arizona summer. Unlike other women who might have access to the gym, "drive thru" or online shopping, these rural women took advantage of grocery shopping to meet their physical activity needs. Kim et al. (2013) found that rural women would go to recreational facilities if they were available or they knew about them. In that study, availability of recreational facilities increased the physical activity of rural women. Therefore, to develop secondary preventive physical activity measures for rural women with CAD post-ICI, it is important to have a clear understanding of rural women's perspective of physical activity (Fahs et al., 2013). It is imperative to know what strenuous chores are for these rural women and how they may or may not be suitable for physical activity to maintain cardiovascular health.

The rural women in our study discussed performing self-care behaviors as part of their daily routine, not as CAD secondary prevention post-ICI. They stopped smoking because it was not good for them. Kim et al. (2013) and Slusher et al. (2010) reported a high prevalence of smoking among rural women. In contrast, all rural women in this study were nonsmokers; seven had never smoked, three had quit smoking. All the women in this study, with the help of their families, took their medications regularly. They checked their blood sugar if they were diabetic and went to their health care professionals when they had appointments.

The rural women in our study also considered how they felt physically before performing some of their self-care behaviors. For example, they checked their blood pressure and self-managed – taking an extra blood pressure pill if blood pressure was high or lying down if blood pressure was low. Buehler et al., (2013) reported that, even though rural women self-evaluated and self-treated as part of their daily routine, it was still not clear whether self-care was used only in response to certain symptomatic illnesses. Equal distribution of secondary prevention measures for self-care behavior modification strategies can help address the CAD disparities. Cardiac rehabilitation services, which are almost inaccessible to rural women, can help control the cardiovascular disease risk factors in rural areas and address the disparities.

A simple call from the clinician's office to remind rural women of their appointment was appreciated, because that also helped the rural women in our study plan their trips. Appointments to the clinician were clustered with other chores at the cities where the cardiology clinic appointments took place. For example, they went to the bank or to the market for fresh fruits and vegetables. Going to the clinician's appointment involved family and neighbors needed to care for their animals while they were gone for the day. The same support was needed in case of an

emergency; the rural women in our study would call on their family members or neighbors or drive themselves to the nearest health care service center.

Studies have reported that relationships individuals have with others (e.g., attending church gatherings) and the trust among community members have an impact on illness management (Crosby et al., 2012; Winters & Sullivan, 2013). Most of the rural women in our study expressed their appreciation and highlighted the support that they had received from their daughters, husbands, sons, friends, and neighbors. Other studies have found that people living in rural areas do not usually adopt new behaviors as rapidly as their urban counterparts (Bennett et al., 2013; Fahs & Kalman, 2008). This has also been discussed as based on their sense of independence, self-reliance, and community pride and on other factors such as geography, social, cultural, and economic factors (Buchanan, 2008; Crosby et al., 2012; Fahs & Kalman, 2008). Some of these positive traits could be incorporated into programs for self-care behavior modification strategies to be more effective in rural communities.

Study Limitations

The difference in the rural geography within states can pose a transferability issue. Although self-care behavior experiences, barriers and facilitators were adequately described, they may be different from one rural area to another or within states and between states. For example, the distance between cities and rural communities in western states and the south eastern states differs. A multi-state qualitative study with a wider range of participants from different cultural backgrounds would enhance the impact of the results.

Conclusion

This qualitative descriptive study focused on self-care behavior experiences of rural women post-ICI and identified barriers to and facilitators of these self-care behaviors. This study is

noteworthy. Even though cardiovascular diseases are the number one cause of death among rural women in Cochise and Pinal Counties, in the U.S, and in the world, to our knowledge, there is no study that has specifically focused on the self-care behavior experiences of rural women with CAD post-ICI. The American College of Cardiology guidelines recommend CAD preventive measures and interventions that are culturally acceptable for individuals (Eckel et al., 2014; Goff et al., 2014). The words that rural women in this study used to describe their self-care behaviors, were consistent with the components of AHA's behavioral recommendations for maintaining cardiovascular health. This study's findings improve our understanding about self-care behaviors among rural women and the most influential aspects of adopting these self-care behaviors. As rural women tend to live well beyond retirement age, their health beliefs may not be associated with their ability to work, rather with their ability to perform housework and normal routines and whatever makes them happy. Self-care is an essential component of secondary prevention of CAD for rural women who have undergone ICI. When developing programs for self-care behavior modification strategies to address CAD risk factors, health care providers must incorporate rural women's individualized daily living experiences for those programs to be successful.

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