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Heart failure patients' perceptions on nutrition and dietary adherence

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Abstract

Introduction—The purpose of this study was to explore patients' perception about how the foods they eat impact HF symptoms, their understanding of dietary recommendations received, and factors affecting their adherence to dietary recommendations that include recommendations to follow a low sodium diet and a low-fat diet.

Methods—Qualitative data were obtained from 20 patients using semi-structured interviews.

Results—The majority of patients believed that food intake could impact their health, but less than half thought sodium could affect HF symptoms. Eighty-five percent of patients received recommendations for a specific diet, but only 60% reported following them. Factors identified as affecting adherence included: a) knowledge, b) social pressure and encouragement from others, c) social situations, and d) food as a source of pleasure and enjoyment.

Conclusion—Ability to follow dietary recommendations remains a problem for many patients. Patients identified several key factors that affected ability to follow dietary recommendations. Strategies that target these factors may promote patients' decision to follow dietary recommendations and enhance their ability to do so.

Keywords

Heart failure; dietary recommendation; adherence

1. Introduction

Despite advances in heart failure (HF) treatment, hospital admissions for HF have increased by 175% over the past two decades (1). About 59% of patients with HF are readmitted to hospitals within 19 months of discharge (2). It is estimated that 50% of readmissions for HF are preventable with 55% of these explained by worsening HF symptoms (3). Exacerbations of HF symptoms are strongly linked to lack of appropriate self-care (4,5). One of the most

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problematic self-care behaviors is adherence to dietary recommendations. Estimates of adherence rates to dietary recommendations vary from 37% to 83% (6-10) but are typically lower than medication adherence rates (6-8,11). Non-adherence to dietary recommendations is closely related to worsening HF symptoms or hospitalizations in patients with HF (5, 12-14). Fluid retention secondary to excessive sodium intake may be responsible for admissions for HF decompensation (4,15).

Possibly because of the large role of sodium intake in HF hospitalizations, current dietary recommendations for patients with HF focus largely on sodium intake and a low sodium diet (i.e., 2-3 grams of sodium per day) is recommended. Other aspects of nutritional intake receive relatively less attention. Patients' knowledge of nutrition is poor, and patients with HF have many misconceptions about nutrition and dietary intake (10,16). Clearly we need a better understanding of patient perceptions about nutrition, including the low sodium diet in heart failure. Understanding these factors could lead to development of interventions to improve patients' nutrition and dietary adherence and in turn prevent frequent rehospitalizations for HF symptoms. The purpose of this study was to explore patients' perceptions on nutrition and dietary adherence in heart failure.

2. Methods

2.1. Design, Sample, and Setting

This was a qualitative descriptive study designed to obtain information regarding patient perceptions about how the foods they eat affect their HF, their understanding of the dietary recommendations they may have received, and their thoughts about adherence to these recommendations, including the low sodium diet. A convenience sample of 20 patients with HF was recruited from the outpatient clinics of two hospitals in a Southern city in the United States. Inclusion criteria were: 1) confirmed diagnosis of HF based on documentation of symptoms and signs of HF and radiological evidence in the medical record; 2) New York Heart Association functional classes II to IV; and 3) ability to speak English. Exclusion criterion was presence of severe psychiatric or cognitive problems.

2.2. Procedure

The approval of the Institutional Review Board of the appropriate institution was obtained prior to data collection. The investigation conformed with the principles outlined in the Declaration of Helsinki (NIH Publication No. 85-23, revised 1985). Eligible patients were identified by trained nurse research assistants. The investigator contacted the patient to provide a detailed explanation of the study and invite them to participate. All patients who were contacted by the investigator agreed to participate. Written, informed consent for participation in the study and verbal consent for audio-recording of the interviews were obtained from all participants. Demographic and clinical characteristics were collected using a questionnaire and patient interview. Semi-structured interviews were guided by a set of questions to standardize the content of interviews, although patients were encouraged to discuss any aspect of their dietary intake, their thoughts about how eating affects HF and their perceptions about adherence to any dietary recommendation they may have received. The interview included questions that were related to three components: 1) perceptions about the effect of food on HF symptoms, 2) patient's comprehension of the low sodium diet and other dietary recommendations they received from their healthcare provider, and 3) factors that affect adherence to recommended diets. Self-reported adherence was determined during the interview by asking patients whether or not they followed the dietary recommendations they received. All patients received US\$20 compensation for their time.

2.3. Data Collection and Analysis

Interviews were performed individually in a room in the General Clinical Research Center of a university-affiliated hospital associated with an academic medical center. All interviews were audio-taped and transcribed verbatim. Each transcribed interview was compared with the audio-tape by two investigators, and any inconsistency between the transcribed interview and the audio-tape was corrected. The transcribed interviews were analyzed using conventional content analysis.⁽¹⁷⁾ The transcribed interviews were read repeatedly for overall understanding of themes and patterns and for enhancement of credibility. The data were coded based on shared concepts. The transcribed interviews and coding scheme were reviewed by each of the investigators separately for the first three interviews to enhance conformability and to minimize personal biases. Any disagreement about the coding scheme was discussed among the investigators until a consensus was reached. After the investigators' agreement on the coding scheme, analysis of the remainder of the interviews was continued by the primary investigator. At least two other investigators reviewed the transcribed interviews and coding of the remainder interviews to enhance trustworthiness. The codes were grouped into larger subcategories and categories based on the content, and reduced to major themes through ongoing discussion by the investigators. All subcategories and categories with the content were reviewed again by three of the investigators to enhance conformability and to minimize personal biases. Demographic characteristics (age, education level, ethnicity, gender, marital status, and living arrangement) were collected using a demographic questionnaire. Functional status (NYHA class) was assessed by patient interview.

3. Results

Fourteen men and six women with HF participated in the study. The mean age of the sample was 58 ± 10 years old with a majority (90%) identifying themselves as Caucasian. Sixty percent were married and 75% lived with someone. Seventy percent had moderately or severely impaired physical function (New York Heart Association functional class III or IV). Eighty-five percent reported receiving materials and/or verbal explanations about dietary recommendations related to sodium and fat by their health care providers who were mainly physicians or dietitians. The self-reported non-adherence rate to any dietary recommendations was 40%.

3.1. Understanding of the impact of food on heart failure symptoms

The majority of patients believed that foods could negatively or positively impact general health and/or HF symptoms. Some believed that everything they ate had an impact on their health and HF. For example, one patient noted: "Basically I think everything, everything you eat, it's either probably good or probably bad. That's what I think." Some patients tried to maintain healthy eating habits because they believed foods affected their HF: "Yes. Yep... definitely [foods impact heart failure]... Well I try to eat low fat, baked food, salads..."

Despite a generalize perception that foods could affect health, less than half of the patients specifically identified salt as a factor affecting HF symptoms. Several patients were able to make a clear connection between salt intake and symptoms. One patient said: "Well I know if I eat salty foods then I will retain fluid." Another observed: "Most of the time...I feel better when I obey. When I cheat, I pay for it. That's the reason. If I eat potato chips, I swell, I can't breath, I can't pee." Other patients reported that avoiding salt made them feel better.

Many patients who identified salt intake as having an impact on fluid retention were not sure about the impact of salt on other symptoms on HF. "I am not sure [of the impact of salt on other symptoms]... I am sure that when I eat a lot of salt, it makes me retain more water.

Because I spoke about pretzels minutes ago. I took on six pounds a while back....So I know now there are certain things I cannot do and cannot eat”

Interestingly, more patients focused on the impact of fat than salt on HF symptoms. Some were able to only describe a vague relationship. “Well, a lot of fat food is not good for your heart.” Others were more specific. “I don’t need to eat too much fat because that’s gonna raise my cholesterol up. If you have high cholesterol, you can have a heart attack or stroke. That’s the way I think about it.”

There were also patients with misconceptions or inadequate knowledge about the impact of food on HF symptoms. For example, one patient reported: “... salt obviously restricts the blood flow and blood vessels and all that stuff, so we want our arteries to be as clean, as open and our blood as flow freeing as possible...salt has a tendency to constrict rather than expand.” Another patient knew the impact of food on diabetes but was not certain whether food had an impact on HF. “I don’t...I don’t really know [whether food impacts heart failure]. I don’t have any way of judging that... That’ll be...I don’t know if it impacts my heart failure...my diabetes, yes [food impacts my diabetes].” One patient reported that food had no impact on HF: “To me it [food] didn’t affect me. I don’t believe. I don’t think it had a lot to do with it...I don’t know if it’s improving but it ain’t going to make it any worse.”

3.2. Factors influencing adherence to dietary recommendations

Multiple factors were reported to influence decisions to follow or not follow a specific diet. We identified four categories of factors that influenced adherence: 1) knowledge, 2) social pressure and encouragement from others, 3) social situations, and 4) food as a source of pleasure.

3.2.1. Knowledge

Only one patient specifically stated the amount of sodium allowed per day: “...according to the nurse that told me about it, I’m allowed 2,000 mg of sodium”. Others described how to use the information received from health care providers to select appropriate foods.

“...that’s what determines if I buy it or not is what’s on that label in the bag. And see, most people don’t know how to read those labels....well, in a can, you may have three servings, you may have two servings or you may have four. So if you eat the whole can, you’ve doubled whatever serving amount it is...”

For many however, retention of knowledge about low sodium diets was identified as an important factor limiting adherence. This included knowledge about how to distinguish between healthy and unhealthy foods, how to cook low sodium meals, and how to determine nutritional components of foods. “...It’s hard to remember which is good, which is bad. What kind of fat is good, what kind of fat is bad.” Others had difficulty applying what they had learned about following the dietary recommendations. “To me it is [hard] right now, because I can’t, I don’t know what to look for. But slowly I’m learning.”

In other cases the problem was either not receiving any information “I’m not really following [any recommendations]....why do I not follow them? Because no one’s told me to be on a strict diet...” or receiving vague information “Well, they weren’t real strict about it [sodium]. They just [said]...use a limited amount. So that’s what I do...about a teaspoon [of salt] a day...”

3.2.2 Social pressure and encouragement from others

Social pressure from others was perceived to have a positive impact on adherence to dietary recommendations. Sources of social pressure included health care providers, spouses, and children. One patient stated. “But if a doctor or someone told me for sure that you definitely

need to do this, you know, I would pay more, be more attentive to that probably.” For others, the situation was not hypothetical. “She is a nurse practitioner. She pretty well lays the law down on me.” Spouses had a similar influence “My wife watches pretty much. I do too, though...[she (his wife) says], ‘you don’t need to be eating that’” Other family members played the same role. “...my daughter’s a respiratory therapist. And she got after me, and the doctors got after me.” Another noted that social pressure from anyone would help. “Because like I’m the kind of person, sometimes I’m a little lazy. If someone tells me, you need to do this, I’m a little bit more apt to it.”

The lack of encouragement and support was identified by patients. When asked who is available to help, one patient stated: “Nobody. If there’s any help, then it’s me.” Another patient reported: “No, my wife, see, she got more problems than me in health.” It should be noted that some patients were self-motivated. “...sometimes you get off the path, but I just get back on it (diet) as much as possible. I am not trying to feel guilty....because I wanna feel good. Because I wanna live as long as God decides that I’m supposed to live and if I am not healthy, how am I gonna do that?”

3.2.3. Social situations

The effects of social situations included limited availability of low sodium food choices at restaurants. “So I don’t concern myself a lot with that [description of items on the menu] because it [heart failure] deals with sodium stuff.....When I get out? The only thing I ever see on the menu is decreased fat stuff.” Some of them had difficulties finding appropriate foods when they went out or visited others’ homes.

It’s easy to maintain a good healthy diet at home to be able to cook the foods you want. But if you’re not home for whatever reason, if it’s a family emergency, or if it’s work or a spouse or if it’s travel, you can’t control the foods you eat as well as you can at home.

Patients had particularly difficulty at social events and during the holidays.

...it’s difficult to remember, especially if you’re in a social occasion, like Thanksgiving or Christmas time. And everyone is eating the food, and they tell you to eat this and then, you know, sometimes you go ahead and eat.....you should not maybe and then later you feel bad.

3.2.4. Food as a source of pleasure and enjoyment

It was difficult for some patients to change their diet because of the pleasure they derived from eating certain foods. One patient acknowledged: “One of the pleasures I guess I get is eating. I hate to say that, but it is a pleasure.” Another noted: “But I have not fully gone along with it because I guess I’m addicted to certain food...” Some patients did not like the taste of foods prepared according to recommended cooking methods. “Green beans don’t taste the same when you cook them simply because you don’t put a big spoon of bacon grease in them to flavor them...” Similarly, a reluctance to change eating habits out of concern for the negative impact it might have on life was also expressed. “...I’m a fearful of changing the type of foods and things that I like to do, like to eat more vegetables.” For other patients, the pleasure obtained from eating certain foods was perceived as more important than the benefits obtained from changing their diet.

The food that they want me to eat does not taste good...I do not like it, and if I do not, if I cannot enjoy what I eat, then I would, then I rather would not. So I continue to eat some things that are bad for me.

4. Discussion

Diet is recognized to be an important component of HF management (18-21). Although patients in this study reported they generally tried to follow low sodium diet recommendation, forty percent reported they did not follow this dietary recommendation. This is similar to the non-adherence rate reported from a meta analysis of 569 studies of adherence across multiple patient populations (6), lower than that reported in prior studies that included only patients with HF (7,8). Our data were collected by patient interview asking whether they followed dietary recommendations while the latter two studies measured adherence rates by a 5-point Likert scale. Thus, differences may be due to the way adherence was defined. In prior studies, adherence was defined as patient self-report of following the diet at least most of the time (8), while adherence in our study was defined as self-report of following the diet all the time. Non-adherence rates measured by 24-hour urine sodium have been reported to be as high as 60% (22). Regardless, nonadherence to low sodium diet is common, even when measured by self-report.

Barriers to following a low sodium diet identified by patients in this study including lack of knowledge about sodium restricted diets, lack of support from friends and family, difficulty finding low sodium foods when eating at restaurants, and dislike of low sodium foods are consistent with findings from quantitative studies (8,22). The current study expands on these previous finding by providing a better understanding of how these barriers affect adherence to dietary recommendations. While patients may have a global understanding of the importance of diet to health, many do not understand or have not retained specific knowledge. This suggests that teaching about low sodium diet needs to be reinforced on a routine basis. Teaching should include the relationship between sodium and HF symptoms, consequences of excess sodium intake, identifying high vs. low sodium foods, how to discuss importance of following diet with family and friends, and how to handle social situations where food is served. Level of understanding should also be routinely checked by asking specific questions regarding these components.

This study also provides further evidence for the important roles health care providers and family play in patient willingness and ability to follow a low sodium diet. Patients reported that clear and accurate explanations as well as emotional encouragement from health-care providers and family were related to their dietary adherence. Some patients felt they did not have enough help from their health-care providers or family, and some did not have any other source of support than health care providers. It is important to note that the patients who received no specific diet recommendation did not eat a low sodium or low fat diet. In several qualitative studies, patients reported that social support from health care providers or significant others, social activities, and social relationships were important in enhancing adherence to treatment regimens (16,23-26). Social environments can also decrease adherence when they are unsupportive of the low sodium.

The taste of low sodium foods has been identified as a common barrier to following a low sodium diet (22). The most compelling finding from the current study was the level of importance patients placed on the enjoyment derived from eating. Some patients made a conscious decision to not follow a low sodium diet, despite knowing the potential consequences, because the enjoyment associated with eating was considered to be of higher value. Given, however, that many patients had a limited understanding of the relationship between sodium intake and HF symptoms, it is possible that some patients do not have a full appreciation of the consequences of their actions. Providing these patients with the appropriate information may change their priorities accordingly. For those patients who fully understand the effects of sodium and still consider enjoyment of food a higher priority, creative strategies should be developed to help them minimize the risk associated with eating favorite foods. These

could include eating smaller portions or assuring that all accompanying foods are low in sodium. A good resource to assist clinicians with this strategy is the *Beginning a New Nutrition Conversation* website (<http://www.ific.org>). As a first step, clinicians should engage patients in a frank conversation regarding the value placed on the pleasure of eating and their perceptions of how sodium restriction alters their eating experience.

5. Limitation

This study was conducted at one site in a Southern city in the United States. Patient knowledge, perceptions, and priorities may vary in other regions. The sample of this study is relatively young, mainly men, and the majority was Caucasian. Thus, caution is needed to generalize the findings of this study to older patients, women, and other ethnicities.

6. Conclusion

Low adherence to dietary recommendations in patients with HF or myocardial infarction remains a concern because it is closely related to high hospitalization rate (4,27-29). Through patient interviews, we identified key strategies that may improve patient adherence to dietary sodium restrictions. Enhancement of their ability to connect sodium intake with HF symptoms will improve their understanding the importance of dietary sodium restriction. Increasing knowledge about identifying foods that are high and low sodium and cooking strategies in will increase their ability to adhere to a low sodium diet. Routinely reinforcing this teaching and verifying patient understanding are essential for the success of this strategy. Skill training to assist patients to talk with family and friends about the importance of serving low sodium foods and help with problem solving to handle social events where food is served are also necessary to promote socialization and while maintaining dietary adherence. Finally, assuring that strategies suggested are aligned with patients' values and priorities regarding food is fundamental to promoting adherence.

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