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Diet and Eating Pattern Modifications Used by Community Living Adults to Manage Their Fecal Incontinence

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Abstract

Purpose—The study aimed to describe modifications in diet and eating patterns made by community-living people to manage fecal incontinence (FI) and to compare these differences according to sex, age, and FI severity.

Subjects and Setting—Subjects were 188 community-living adults (77% female, 92% white, 34% ≥ 65 years of age) in the upper Midwest who participated in a study about managing FI with dietary fiber.

Methods—Subjects were interviewed about diet and eating pattern changes that they made to manage FI and self reported demographic data. FI severity was recorded daily.

Results—Fifty-five percent of participants perceived that some foods worsen their FI (e.g., fatty or spicy foods and dairy products). More women than men (40 vs 18%, p=.008) reported avoiding foods in order to manage FI. A greater percentage of younger than older people believed that fatty/greasy foods (15% vs. 4%,) and alcohol (14% vs. 3%,) worsened their FI. Subjects with a higher FI severity score appeared to wait until FI was more severe before restricting caffeine than those with lower severity scores (22.2 ± 9.8 vs 11.69 ± 8.3, p = .034). One-third of subjects consumed foods rich in dietary fiber to prevent FI. Subjects also reported altered eating or cooking patterns; skipping meals, or eating at consistent times to manage FI.

Conclusions—Diet modification for managing FI incorporates involves restriction of some foods, along with adding others foods to the diet. Nursing assessments of self-care practices for FI should include diet and eating pattern changes when developing a plan of care.

Introduction

Fecal incontinence (FI) is a significant and sensitive matter for those who suffer from it. The prevalence of FI in the community is estimated to be slightly less than 10%.[1] Individuals experiencing FI are often embarrassed about their inability to control bowel function, and many do not discuss their problem with a health care professional.2 As a result, they tend to rely on self-care approaches such as dietary modifications. Effective dietary strategies may offer an adjunctive or alternative intervention to antidiarrheal medications for some individuals and may reduce the need for other self-care approaches such as use of absorbent pads or briefs.

Review of Literature

Dietary strategies may be used to manage altered bowel patterns such as FI and constipation. A study by Bliss and colleagues[2] was the first to our knowledge to document evidence of

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dietary modification to alleviate FI. They surveyed 1,352 community-living elderly about FI and its management. Of the 242 elderly who reported having FI more than once in the past year, 67% used self-care practices such as change of diet or food avoidance to manage their symptoms. They also reported that significantly more women than men engaged in self-care practices, and greater FI severity increased the likelihood of using self-care practices.

To examine the potential impact of diet modifications on nutritional adequacy, Bliss and coworkers[3] compared the nutritional composition and recommended daily allowances of the diets of adults with FI to age and gender matched controls with normal bowel function. They found that subjects with and without FI could benefit from a diet consisting of lower levels of sodium and protein, and more dietary fiber.

Hansen and coinvestigators[4] analyzed data from interviews of 10 community-dwelling women between the ages of 35 and 78 years about their lived experience in managing FI. Dietary strategies included modifying food types and eating patterns. Women restricted foods that contained caffeine and those perceived as producing flatus such as onions. Respondents stated they ate less or not at all when in public or before leaving their homes. In addition, some participants reported consuming foods or drinks as a treatment for FI. For example, prunes were eaten with the aim of stimulating a rectal emptying. In contrast, some women stated they had returned to eating “troublesome” foods and were resigned to deal with the consequences of FI. In addition, participants reported that they did not receive adequate therapeutic advice from their physicians about the effect of diet on FI or how to modify their diet.

Müller-Lissner and associates[5] examined the relationship between foods, beverages, stool consistency, and constipation. They surveyed 200 healthy people, including 122 with chronic constipation, and 766 with irritable bowel syndrome with constipation to determine whether certain foods produced harder or softer stools. All three groups reported that chocolate, bananas, and black tea were associated with hardening of stools while prunes and coffee softened stools.

These studies reveal limited research on the influence of diet and FI or how individuals with FI or constipation perceive that diet affects stool consistency and their bowel pattern. Thus the purpose of this study was to explore self-management of FI by diet modifications. Specific research questions for this study were: (1) What are the self-care practices of diet and eating pattern modification used by community-living individuals with FI of loose or liquid stools to manage their symptoms, and (2) Are there differences in diet and eating pattern modifications based on sex, age, or FI severity? For the purposes of this study, we defined diet and eating pattern modifications as avoiding or eating less of certain foods or beverages, purposefully eating or drinking specific foods to treat FI, adopting specific eating patterns, and preparing foods in specific ways due to FI.

Methods

This study used a descriptive comparative design. It was a secondary analysis of data from a clinical trial comparing the effectiveness of three dietary fibers and a placebo on reducing FI (“Impact of Fiber Fermentation on FI,” National Institute of Nursing Research, NIH R01-NR07756) referred to in this paper as “The Fiber Study”. Subjects in the Fiber Study collected data during a 14-day baseline period after which they were randomly assigned to receive one of three dietary fiber supplements or a placebo for 38 days. Collection of data during the last 14 days of the supplement period was similar to that during the baseline period.

At the start of the study, participants were asked to answer eight questions specifically focused on diet and eating pattern changes employed to manage FI. A demographic form provided data about patient characteristics such as age and gender. FI severity was determined from daily reports of frequency, amount, and consistency over the 14-day baseline period of the parent study.

Data and Statistical Analyses

A content analysis of responses to questions about changes in diet and eating patterns was conducted. As themes emerged from the review of responses to each question, they were coded, reviewed, and categorized based on the uniqueness and appropriateness to each group. Responses were reviewed for thematic subcategories. The subcategories were then reviewed by the investigators and discussed in relation to the data until consensus was reached. The text was interpreted and analyzed to determine essential themes by a research team who worked together to reach consensus.

Descriptive statistics such as percentages, means, standard deviation, median, and range were used to describe the demographic characteristics of the sample. Chi square test was used to determine the significance of differences in the FI severity scores of those making various diet and eating pattern modifications and those who did not. A t-test was used to test the differences in the codes of diet modification and the FI severity score. The alpha level of statistical significance was .05.

Results

The sample comprised 188 participants who were at least 18 years of age, experienced involuntary leakage of loose/liquid stool at least twice in two weeks, were able to toilet independently, did not living in a nursing home or assisted living, and did not have any eating or swallowing problems. Their mean age was 58 ± 14 years and 34% (64/188) were ≥ 65 years of age. The majority were female (77%); 92% identified as white, 4% identified as Black, and the remaining indicated they were Asian, Native American or more than one race.

More than half (55.3%) of subjects reported that some foods worsened their FI. The most common categories of foods thought to worsen FI in order of frequency were vegetables, spicy foods, fruits, fatty or greasy foods, caffeine-containing foods, and dairy products (Table 1). Approximately one-third of subjects avoided (36%) or ate less of certain foods (33%), typically the same as those thought to worsen FI (Table 2). Nearly 4% (7/188) of participants reported that alcohol worsened FI, but few subjects avoided (1%) or restricted (1%) alcohol intake. Although 11% of subjects reported that caffeinated foods worsened FI, only 2% avoided these items.

One-third (33.5%) of participants ate certain foods as part of their management of FI (Table 2), most commonly fiber containing foods and cereals, fruits (e.g., bananas, apples, and raisins), and some vegetables (e.g., lettuce, celery, and carrots) as well as fiber supplements. Some also ate yogurt and cheese as a therapeutic strategy. Twenty percent of subjects modified eating patterns to reduce FI (Table 3). The most frequent modification was avoiding a meal. Others reported eating at consistent times. Altering ways of preparing foods such as cooking without spices or broiling foods instead of frying them were common strategies.

Comparing Modifications of Men vs. Women

Analysis of results revealed differences between men and women in three areas: types of foods thought to worsen FI, avoiding certain foods, and eating foods for a therapeutic intent.

A greater percentage of women than men perceived that fatty/greasy foods (14% women vs. 0% men, p = .008), fruits (13% women vs. 2% men, p = .04), and alcohol (12% women vs. 2% men, p = .05) worsened their FI. The percentage of women who avoided foods to reduce FI (40%) was more than twice that of men (18%, p = .008). An example of a type of food avoided by more women than men was raw vegetables (11% vs 0%, p = .02). More men than women reduced consumption of spicy foods (16% vs 3%, p = .003). Approximately twice as many women as men purposively ate certain foods such as oatmeal, yogurt or fiber bread to prevent or reduce FI (37% vs 18%, p = .02). Analysis revealed no significant differences between men and women in adopting any special eating patterns to manage FI.

Comparing Modifications of Younger vs. Older Individuals

Younger and older subjects differed in their perceptions about foods that worsened FI. Younger respondents were more likely to perceive that fatty/greasy foods worsened their FI (15% vs. 4% p = .03), while older subjects thought that beans worsened FI (7% vs. 2%, p = .048). Similarly, a greater percentage of older people avoided eating beans than younger people (6% vs 0.8%, p = .04). The percentage of younger people who reported that alcohol worsened their FI was four times greater than the percentage of older people who perceived alcohol as provocative of FI (14% vs. 3%, p = .01). Younger people associated beer intake with FI but older people did not (6% vs 0%, p = .03). A greater percentage of younger people restricted intake of dairy products as a FI management strategy (9% vs 1.5%, p = .04). There were no significant differences in foods eaten to prevent FI or special eating patterns to manage FI between young and old participants.

Comparing Modifications by FI Severity Scores

Significant differences in FI severity were noted based on dietary intake. For example, individuals who avoided caffeine drinks had a significantly higher FI severity score than those who did not (22.2 ± 9.8 vs. 11.69 ± 8.3, p = .034). In contrast, those who avoided eating ethnic foods had a lower total FI severity score compared to those who do not (3.66 ± 1.2 vs. 12.34 ± 8.5, p <.001). Individuals who avoided eating foods associated with flatus also had a lower FI severity score than those who did not (6.67 ± 4.04 vs. 12.58 ± 8.66, p= .004). People who restricted the amount of food they ate had lesser FI severity than those who did not (8.64 ± 6.48 vs. 13.31 ± 8.6, p= .038).

Discussion

More than one in three persons with FI engaged in diet and eating pattern modifications in order to alleviate or prevent incontinence episodes. These findings substantiate previous reports of smaller samples of women with FI that patients not only believe that their diet influences FI but act on this perspective.[2,4,5] We found no studies evaluating the effectiveness of dietary modifications on FI severity; these findings may help to guide the development of such an intervention.

We observed that patients' approach to diet modification for managing FI was both adoptive and restrictive. For example, eating greater amounts of fiber is an adoptive strategy while avoiding fatty foods is restrictive. In an integrative review of the literature, St. John and associates6 identified restriction as a theme of activities for controlling urinary incontinence in community-living women. Some of the strategies reported by these women, such as restricting caffeinated drinks and alcohol, are similar to those reported by our subjects for managing FI. Peden-McAlpine and coworkers[7] also described adoptive and restrictive behaviors in other areas of FI management used by community dwelling women. Examples include limiting travel outside the home, or traveling only to areas where toilet locations were known (restrictive behaviors) and preparing kits of wipes, extra underwear and pads to

keep in their purse in the event of an incontinent episode (adoptive behaviors). The percentage of subjects who used either of these types of practices, restrictive or adoptive, was similar, approximately one-third each.

Some foods perceived to worsen FI are consistent with those reported by Hansen's group.[4] In both studies, participants perceived that foods containing caffeine such as coffee, caffeinated sodas, and chocolate, fatty foods such as bacon and gravy, dairy products such as milk, ice cream, and cheese, and vegetables associated with flatus including cabbage and broccoli reportedly worsened FI. Hansen and colleagues[4] discussed possible reasons why some foods might worsen FI such as stimulation of gastrointestinal motility by caffeine or sorbitol-containing diet beverages, lactose or fat intolerance, or expulsion of feces by flatus from gas-producing vegetables or cruciferous foods such as nuts. Gluten, which is found in wheat-containing foods such as pasta, flour, and baked goods, can cause symptoms of diarrhea[8] and may partly explain the avoidance of carbohydrates by some individuals with FI.

To help manage their FI, subjects in this study purposefully consumed a variety of foods or supplements containing dietary fiber. The percentage responding that they ate dietary fiber to alleviate FI may be higher than expected because of the nature of the parent study that evaluated management of FI with dietary fiber. Eating a fruit such as raisins may have been used by some subjects to alleviate FI because of their presumed laxative effects[7]. Hansen's group[4] also observed that yogurt was consumed as a way to reduce FI severity. Subjects perceived yogurt as helpful because active bacterial cultures are thought to re-colonize the large bowel and promote more normal function.

Unlike subjects with IBD in the study by Mueller-Lissner and coinvestigators[5] who perceived that chocolate resulted in more formed stools, several of our subjects reported that chocolate worsened FI and only one reported eating chocolate to alleviate symptoms. Although cheese is thought to have a constipating effect by some people [9] it was avoided by many of our subjects as a means to prevent FI. Yogurt and cheese were perceived to have mixed effects of FI; some perceived reported that these foods worsened FI, but others consumed these foods to reduce FI severity. Some of our subjects may have avoided yogurt and cheese due to possible lactose intolerance while others may have desired the effects of active bacteria cultures or found cheese to be constipating. Other foods with perceived mixed effects included fruit, raw vegetables such as celery and lettuce typically used in salads, and meat-bean preparations such as chili and pork. The rationale for eating some foods, such as mashed potatoes or pork, to alleviate FI is difficult to explain and may reflect temporary trial and error efforts by individual subjects, or a need to retain consumption of certain "comfort foods".

Findings in this study support and more fully describe dietary modifications of diet we previously identified as a self-management strategy for FI.2–4, Modifications previously reported include skipping meals and reducing the amount of intake before or when in public. 2, [4] Additional modifications include preparing foods in alternate ways (broiling vs frying), adding ingredients (such as fiber) to dishes not in the original recipe, varying spices, and restricting caffeinated coffee intake to the morning and while at home. The pattern of eating meals at consistent times may be an attempt to regulate timing of bowel movements.

The severity of FI was influenced dietary modifications. Individuals appear to wait until FI is more severe before avoiding caffeine, but they tend to restrict ethnic foods and beans in response to less severe incontinence. For example, caffeine-containing beverages such as coffee and sodas were identified the most often but were restricted by the fewest subjects. Nevertheless, some participants reported that they continue to ingest these foods and "deal

with the consequences". These findings are similar to those of Hanson's group[4] who also reported that participants were willing to cope with FI in exchange for consuming foods that they enjoy.

Limitations

A limitation of the study is that participants may not have remembered all the possible ways that they altered their diet and eating patterns However, the findings provide information that may be used for a checklist to prompt recall in future studies. Diet, like FI, is a sensitive topic for some people to discuss; therefore, subjects may have been reticent to fully answer the questions by study team members whom they just recently met. For the parent study, subjects were testing dietary fiber supplements; hence, as part of the explanation of the study during the consent process, subjects understood a potential benefit between dietary fiber and FI management that influenced their responses to questions in this study.

Conclusions

The findings of this study describe the perceptions and actions of persons with FI who modify their diet and eating patterns in an attempt to reduce their FI severity. These can serve to guide future studies about possible dietary interventions on managing FI. Community-living individuals are receptive to making diet changes as part of a plan of self-care for FI and demonstrated that there is a need for further investigation of effective approaches. As evidence becomes available, dietary approaches might offer an adjuvant therapy to pharmacological and behavioral interventions. The results suggest that diet and eating pattern changes be included in nursing assessments of self-care practices for FI when developing a plan of care.

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Table 1

Foods Perceived to Worsen FI

Foods that Worsen FI	% of Subjects
Overall	55.3%
“Acidic foods”	1.1%
Alcohol (beer, wine, red wines)	3.7%
Beans/legumes	3.7%
Caffeinated (coffee, colas, chocolate)	10.6%
Carbohydrates (spaghetti, white breads, pancakes)	3.7%
Dairy products (milk, cheese, chocolate milk, cream)	5.3%
Ethnic (Chinese, Mexican, Italian, Ethiopian spices)	4.8%
Fatty/greasy (fast food, pizza, bacon, gravy, fried foods)	11.2%
Fiber (whole grains)	1.6%
Fruits (orange juice, fruit juice, fresh fruit, raisins, prune juice)	11.2%
Gas producing vegetables (broccoli, onions, cabbage, cauliflower, garlic, artichokes)	6.9%
Any foods that produce gas	1.1%
Nuts (peanuts)	1.1%
Other (junk food, non-dairy substitutes, monosodium gluconate ((MSG)), restaurant food)	3.7%
Protein (shellfish, lutefisk fish, chili, beef, eggs)	4.3%
Spicy foods (hot wings, chili)	11.2%
Sugar/candy (pop)	5.9%
Sugar substitutes/reduced calorie/diet foods (diet pop, sugar-free candy, aspartame sweetener, chips with fat substitute)	3.2%
Vegetables (salad, lettuce, tomatoes, raw veggies, carrots, corn)	13.3%

Table 2

Diet Modifications by Community Living Individuals to manage FI

Food Category	% of Subjects Avoiding Foods	% of Subjects Eating Less of Foods	% of Subjects Eating Foods To Prevent or Reduce FI
Overall	35.6%	33%	33.5%
Alcohol	1.1% beer	1.1% beer, red wine	
Beans/Legumes	2.7%	3.2%	
Caffeinated	2.1% coffee, chocolate, cola	4.8% coffee, chocolate, cola	0.5% chocolate
Carbohydrates	1.1% foods with wheat flour, white rice, pasta	0.5% pasta	0.5% mashed potatoes
Cereal			6.9% oatmeal, raisin bran, bran cereal, granola cereal
Dairy	6.9% cheese, milk, cream, ice cream, yogurt	5.9% cheese, milk, cream, ice cream	5.3% cheese, yogurt, fat-free yogurt, pudding
Ethnic	3.2% Mexican, Chinese, Italian, Hispanic	3.2% Mexican, Chinese, Italian, Hispanic	
Fatty/Greasy	10.6% fast food, French fries, fried foods, bacon	6.9% fast food, French fries, fried foods, bacon, gravy	
Fiber- Containing Foods	1.6% high fiber bread, grains, fiber	1.1% high fiber bread, grains	15.9% fiber bread, bran muffins, whole grain bread, whole wheat, soy- fiber products
Fiber Supplements			2.7% flax seed, tablets containing inulin fiber, psyllium powder, ‘Fiber’ Pills
Fruit	4.3% orange juice, fresh pears, raw apples, any fruit	5.3% orange juice, fresh pears, prunes, smoothies, any fruit	8.5% apples, grapes, bananas, raisins, juice
Gas-Producing Vegetables	5.3% onions, cabbage, cauliflower, broccoli	4.8% onions, cabbage, cauliflower, broccoli	
Any Food that Produces Gas Nuts	1.1% 1.6% peanuts	1.1% 1.6% peanuts	
Other	1.6% non-dairy substitutes, Monosodium Gluconate (MSG), restaurant food	0.5% non-dairy substitutes	
Protein	4.3% chili, pork, shellfish, eggs	4.3% chili, pork, shellfish, eggs	1.6% chili, pork, chicken
Spicy	6.9% hot wings, salsa, chili	6.4% hot sauce, hot wings, salsa, chili	
Sugar/Candy	2.1% pop, sugar	2.1% pop, sweets	
Sugar Substitutes	1.6% sugar-free candy, artificial sweeteners	2.1% sugar-free candy, artificial sweeteners, diet pop	
Vegetables	8.5% salads, lettuce, green beans, raw vegetables	4.8% salads, lettuce, green beans	8% salads, romaine lettuce, green vegetables, celery, carrots

Table 3

Modifications in Eating Patterns for Managing FI

Example of Special Eating Patterns Used	% of Subjects
Overall	20.7%
Avoids meals (before activity or going out or at work)	12.2%
Avoids preparing foods in certain ways	6.9%
Avoids frying foods	5.9%
Prepares food in special ways	5.3%
Eats at consistent times (does not eat before bed, eats 5 meals per day)	4.3%
Avoids spices when cooking	2.7%
Avoids coffee intake at times (only has coffee in morning, avoids coffee before work)	2.1%
Avoids cooking with fat or grease	2.1%
Avoids eating too much	1.6%
Bakes/broils food	1.6%
Changes diet before going out (eats bland diet before going out, only eats specific foods)	1.1%
Adds fiber to foods when cooking (puts bran in casserole)	1.1%
Varies spices when cooking	1.1%
Eats healthy	0.5%
Avoids baking food	0.5%
Reduces food intake	0.5%