CHAPTER IV
RESULTS AND DISCUSSIONS

RESULTS
RESPONSE RATE OF PHYSICIANS
Of 540 primary-care physicians surveyed, 209 surveys were returned for a response rate of 38.7%. Forty-two percent of family practitioners and 36% of internists surveyed responded.

Thirty-five percent of physicians from metropolitan areas and 40% of physicians from non-metropolitan areas responded. Fifty-six of the 209 (27%) physicians practiced in a metropolitan area, whereas the remainder of the physicians (63%) practiced in a non-metropolitan area.

CHARACTERISTICS OF INTERVIEWED FSNEP CLIENTS
Fifty-seven Food Stamp and Nutrition Education Program (FSNEP) clients constituted the final study sample. Of these participants, 51 were female and all had an income of 150% or less of the federal poverty guidelines. Twenty-six of 57 (46%) clients received food stamps. The interviewees were predominately white (48), although nine were black. Their average age was 68 years with a range of 48 years to 88 years. The subjects’ average education level was 9.6 years of high school completed with 16 of 57 (29%) having a high school diploma. The most prevalent chronic disorders reported by the clients were high blood pressure (31), being overweight (24), type 2 diabetes (23), and high cholesterol (22). See Table 3 for a complete list of the FSNEP clients’ chronic diseases and conditions.

The clients reported that they visited a family physician or internist 5.7 times a year and the emergency room, Free Clinics, and health departments a combined 3.1 times a year. There was a significant inverse relationship between the clients’ education level and the number of times they visited a family/general physician or internist in his or her office (p < .014, Kendall’s tab b).
CHARACTERISTICS OF SURVEYED PHYSICIANS

One hundred and seventy-eight of the 209 (85%) responding physicians were male. Family practitioners comprised 59% of the study population, while the remainder were internists (41%). One hundred and forty-six (70%) physicians were aged 50 years or younger and 149 (72%) had been practicing medicine for 20 years or less. Seventy-four percent were in a group practice, while 20% were solo/independent.

Ninety-five percent of physicians reported that at least half of their patients were aged 40 years or older, whereas only 56% reported that at least half of their patients had a diet-related chronic disease (see Table 4). Thirty-eight percent reported that at least half their patients were low-income, whereas 39% stated that about one fourth were low-income.

NUTRITION ATTITUDES OF PHYSICIANS

The majority of physicians felt that diet is “important” (11%) or “very important” (87%) in the management of diet-related chronic diseases (see Table 5). Correspondingly, the majority of physicians also indicated that diet is “important” (23%) or “very important” (75%) in the prevention of diet-related chronic diseases. Analysis indicated that physicians felt that diet was significantly more important in the management of diet-related chronic diseases than in the prevention of these disorders (p < .001, paired samples t-test). Also, physicians who reported using an in-house RD to provide nutrition counseling had significantly more positive attitudes about diet’s role in the management of diet-related chronic diseases than those who did not report using a RD (p < .028, Kendall’s tau b).

NUTRITION COUNSELING DURING OFFICE VISITS REPORTED BY PHYSICIANS AND FSNEP CLIENTS

The physicians reported that their patients are given nutrition information by at least five different types of professionals in their office setting (see Table 6). There was a significant difference between the physicians’ view of the provision of nutrition counseling in their
offices and the FSNEP clients’ view of their primary-care physician’s nutrition counseling (p < .001, two sample t-test). Seventy-five percent of physicians stated that they personally provide nutrition counseling to their patients, whereas only 47% (27) of clients reported that they had received nutrition counseling from their primary-care physician. Correspondingly, 40% of physicians versus 9% (5) of FSNEP clients reported that a nurse provides nutrition information. Furthermore, 18% and 15% of physicians versus 4% (2) and 7% (4) of FSNEP clients stated that a nurse practitioner or registered dietitian (RD) provides nutrition counseling during office visits, respectively. Eighteen clients (32%) commented that no one provided nutrition information to them during office visits, whereas none of the physicians stated this.

Eighty-one percent of physicians reported that they provide nutrition counseling “often” or “very often” to chronic disease patients, 43% to patients who are generally malnourished, and 66% to patients who are at risk of developing diet-related chronic diseases (see Table 7). Analysis revealed that physicians provide significantly (p < .001, paired sample t-test) less nutrition advice, as a preventive measure, to patients at risk of developing diet-related chronic diseases than to those who already suffer from these diseases. Only 35% (20) of FSNEP clients reported receiving nutrition counseling “most of the time” or “always” during physician office visits, while 28% (16) reported receiving nutrition counseling “sometimes”. There was a significant difference between the physicians’ report of how often they provide nutrition counseling to both chronic disease patients and patients at risk of developing diet-related chronic diseases and the clients’ report of how often they received nutrition counseling from their primary-care physician (p < .001, two sample t-test). As the clients’ ages increased, the amount of nutrition advice they received from their primary-care physicians tended to decreased. This relationship approached significance (p < .053, Kendall’s tau b). There was a significant positive correlation between the presence of an in-house RD to provide nutrition counseling and the amount of nutrition counseling the physician reported providing (p < .006, Kendall’s tau b).
Forty-eight percent (27) of FSNEP clients reported that they followed their primary-care physician’s nutrition advice “most of the time” or “always”. Seventy percent (40) of clients stated that they felt they should be given more nutrition information during office visits. There was a significant negative correlation between how often the clients felt they should have received more nutrition information and how often their physicians provided this information (p < .004, Kendall’s tau b). One half (28) of FSNEP clients reported that they perceived their physician’s nutrition advice to be “good” or “very good” (see Table 8). Fifty-seven percent of clients (32) reported that they understood “most” or “all” of their physician’s nutrition advice. There was a significant positive correlation between the clients’ report of how often they followed their physician’s nutrition advice and how good (p < .015, Kendall’s tau b) and understandable (p < .005, Kendall’s tau b) they perceived the advice to be. The clients who reported receiving nutrition information from their physician on a regular basis had a significantly more positive perception of the advice than those who reported receiving nutrition counseling on an irregular basis (p < .001, Kendall’s tau b).

Sixty-one percent of physicians indicated that they felt “fairly well prepared” or “very prepared” to provide nutrition advice to patients. There was a significant positive correlation between the physicians’ perceived preparation to perform dietary counseling and their positive attitudes about the role of nutrition in the management of diet-related chronic diseases (p < .003, Kendall’s tau b) and how often they reported providing nutrition counseling to both patients with diet-related chronic diseases (p < .001, Kendall’s tau b) and patients at risk of developing these diseases (p < .001, Kendall’s tau b).

**NUTRITION REFERRAL PRACTICES OF PHYSICIANS REPORTED BY PHYSICIANS AND FSNEP CLIENTS**

Seventy-two percent (150) of physicians reported that they “never/rarely” refer patients to community nutrition programs, while 23% (48) reported that they “sometimes” refer patients to these programs (see Table 9). There was a significant negative correlation between the physicians’ number of years in practice and how often they reported making referrals to
community nutrition programs (p < .041, Kendall’s tau b). Only 18% of physicians reported that they “never/rarely” refer patients to outside RDs, while 52% “sometimes” and 24% “often” refer patients to RDs. Physicians who had been practicing medicine for a shorter time were significantly more likely to refer their patients to a RD (p < .021, Kendall’s tau b).

Sixty-seven percent (38) of FSNEP clients stated that they had not been referred to a nutrition professional or program in the previous five years by their family physician or internist. The older clients were significantly less likely to be referred to an outside nutrition education service (p < .001, Kendall’s tau b). Also, the more educated clients were more likely to be referred to an outside nutrition professional or program than those clients who were less educated. This inverse relationship was not significant.

At least one referral was made to a registered dietitian by 86% of physicians in the previous three months, whereas only 18% (10) of clients reported they had been referred to a RD in the previous five years (see Table 10). This difference was significant (p < .001, z-test of proportion). Home health agencies, private organizations or weight control programs, and WIC were utilized by 42%, 31% and 16% of physicians as referral sources, respectively. On the other hand, only 6% (3) of FSNEP clients stated that they had been referred to one of these sources. Social services or Food Stamp offices, health departments, Free Clinics, and emergency food sources were used as a referral source by a combined 42% of physicians, whereas 9% (5) of clients reported use of these services as a result of a primary-care physician’s referral. Only two physicians and one patient reported the use of Cooperative Extension Services as a referral source.

**FAVORABLE AND UNFAVORABLE ATTRIBUTES OF NUTRITION EDUCATION REFERRAL SOURCES REPORTED BY PHYSICIANS**

There were several attributes of community nutrition education programs that physicians felt are important in their decision to refer low-income patients to such services. See Table 11 for a complete list of these attributes. A free or low cost service was chosen as an important attribute 93% of the time, while accessibility, a quick referral process, and the provision of
follow-up reports to the physician’s office were chosen by 74%, 70%, and 64% of respondents, respectively. Forty-nine percent and 39% of physicians felt that personal knowledge of the program’s nutrition training and expertise and knowledge of the program’s ability to work with low-income patients are important attributes, respectively.

Physicians were also asked to indicate factors that prevent or dissuade them from making referrals of their patients (of all income levels) to nutrition counseling/education services. Fifty-seven percent of respondents reported that services which are too expensive and/or not covered by insurance dissuade them from making referrals. Forty-two percent of physicians stated that there are few or no services available in their area, while 35% reported that poor accessibility to patients discourages their referral. Twenty-three percent and 15% of physicians indicated that patient compliance to referrals would be low or that their own office provides adequate dietary counseling, respectively. A time consuming referral process (11%), no confidence in the programs’ ability to provide adequate nutrition counseling (5%), not personally convinced of the value of such services (5%), and a belief that it is a physician’s sole responsibility to provide dietary counseling (1%) were infrequently chosen as dissuading factors in making referrals.

**INFLUENCE AND DISCUSSION OF PATIENTS’ SOCIOECONOMIC SITUATIONS**

Forty-five percent of physicians felt that their patients’ socioeconomic situations are important in determining whether or not a referrals are made to outside registered dietitians. Thirty nine percent of physicians felt that their patients’ socioeconomic status influences them in determining the content of dietary advice (see Table 12).

Eighty-one percent (46) of FSNEP clients reported that they “never” talk with their primary-care physicians about their financial situation. Forty-four percent (25) of clients stated that they believe it is not acceptable for a physician to ask patients about their income, whereas 35% indicated that it is acceptable. Sixty-five percent (37) of clients reported that they use
Medicare to pay for physician services, while 33% (19) reported they use Medicaid, 33% (19) use private insurance, and 33% (19) use their own money.

DISCUSSION
The physician response rate of 38.7% in this study was comparable to the response rates in other physician surveys. There may be a bias in results due to a possible higher response rate among physicians who have positive attitudes about nutrition and/or have ties to Virginia Tech. This may have yielded more positive physician attitudes about nutrition and a higher reported rate of nutrition counseling and referrals by physicians than is the actual situation. Reasons for FSNEP client non-participation included sickness, mental health issues, and unavailability. It is unknown whether or not these factors biased the results from the client survey.

CHARACTERISTICS OF PHYSICIANS AND FSNEP CLIENTS
Based on demographic characteristics, the FSNEP clients were representative of other program clientele, although only clients with chronic diseases and conditions were included in this study. Surprisingly, the eleven Program Assistants, who recruited subjects, reported some difficulty in identifying a sufficient number of FSNEP clients with chronic diseases and conditions for this study. It had previously been believed that a larger proportion of FSNEP clients had a chronic disease. However, chronic disease information previously had not been collected on the FSNEP client family record and it is unknown what portion of all Virginia FSNEP clients suffer from chronic diseases and conditions. A high occurrence of chronic diseases and conditions is characteristic of low-income individuals.

All of the FSNEP clients’ chronic diseases and conditions have a strong dietary component and most of the clients should have been seeing a primary-care physician on a regular basis. As expected, the clients’ use of office-based family/general physicians and internists was higher at 5.7 times a year than that reported for low-income individuals, with and without chronic diseases, by other investigators. Based on this study’s data, it appears that clients
could be more easily accessed for nutrition education through office-based primary-care physicians than through other health care professionals.

Physicians reported that most of their patients were aged 40 years or older and about one fourth to one half suffered from diet-related chronic diseases and conditions. In contrast, most physicians reported that their patients were predominantly not low-income. Thus, physicians should be performing a substantial amount of nutrition counseling or making referrals for such counseling with some of this effort being directed at low-income patients. There is some potential for referral of low-income, chronic disease patients from primary-care physicians to free community nutrition education programs; though, the potential is lower than previously believed by the investigators in this study.

**NUTRITION ATTITUDES OF PHYSICIANS**

Nearly all physicians felt that nutrition is very important in the management and prevention of diet-related chronic diseases, which is consistent with the findings of other studies. However, this attitude expressed by physicians could have been influenced by the wording of the survey questions which may have tended to elicit positive responses from the physicians (see Appendix B, Question #7a). The obvious connection between “diet” and “diet-related chronic diseases” might have biased physicians’ answers. The specific diseases listed in the question were clearly identified as “diet-related chronic diseases” in the beginning of the questionnaire. Rewording this question to remove any possible bias may decrease physicians’ reported positive attitudes about nutrition counseling and/or nutrition referrals. Also, each individual disease listed in the question may have been perceived as being more or less affected by diet than the other disorders listed, but this information could not be determined from the collected data.

Since physicians who had more positive attitudes about the role of nutrition in disease management perceived themselves to be more prepared to perform such counseling, it is appropriate to argue that an increased amount of nutrition training during medical school
and/or residency would increase physicians’ perceived ability to perform nutrition counseling. Most physicians and medical students are currently not satisfied with the nutrition training they have received or are receiving in medical school.⁴³

It was unexpected that physicians would feel that diet is more important in the management of diet-related chronic diseases than in the prevention of such disorders. Dietary counseling is normally considered a preventive service,⁴² whereas management of chronic diseases is often achieved through more aggressive procedures, such as drug therapy. Nonetheless, physicians strongly felt that diet is effective in the management and prevention of diet-related chronic diseases.

**NUTRITION COUNSELING BY PHYSICIANS**

**Sources of nutrition counseling.** Even though certain FSNEP clients may have utilized the services of some of the physicians in this study, these two groups were considered to be independent of one another. Physicians reported that their offices perform far more nutrition counseling than was indicated by the FSNEP clients. This difference occurred despite the fact that physicians were asked to provide information on the individual who administers most of the nutrition counseling in their office, while clients were asked to provide information on all individuals who had provided them with nutrition information during physician office visits. However, physicians consistently reported on more than one source of nutrition counseling for this question.

Both physicians and FSNEP clients stated that physicians are the major source of nutrition counseling. Forty percent of physicians reported that nurses provide nutrition counseling, whereas only 9% (5) of clients reported this. Physicians indicated that they utilize RDs and nurse practitioners to a small degree with physician assistants contributing a negligible amount of nutrition counseling. Overall, results indicate that over one third of patients receive nutrition counseling from one of these non-physician, health care professionals during office visits. Thus, RDs, nurse practitioners, and to a lesser extent physician assistants must
be taken into account when assessing the provision of nutrition counseling in physicians’ offices. However, O’Keefe\(^{10}\) found that only 40% of physicians had a health care professional to assist them in the provision of nutrition information. It is unclear whether or not patients receive nutrition counseling from their physician during the same visits they are counseled by another health care professional.

**Nutrition counseling rates.** Whereas none of the physicians reported that nutrition counseling was not provided, 32% (18) of FSNEP clients reported that no one spoke with them about nutrition issues during office visits (see Appendix C, Question #10). The number of clients who reported this was surprisingly high since this group suffered from many diet-related chronic diseases and conditions that needed to be partially managed by diet. In a similar question on the FSNEP client survey (see Appendix C, Question #4), a comparable number (21) of clients reported that they had “never” received nutrition advice from their primary-care physician. Similar responses to both questions adds validity to the FSNEP clients’ report that they had not received nutrition counseling for their chronic disease.

Since the severity of chronic diseases increases with age, the finding that the older FSNEP clients received less nutrition counseling than the younger clients was unexpected. One explanation for this is that physicians limit the amount of nutrition counseling they provide to older patients as more aggressive means of treatment are emphasized when an older patient’s disease state deteriorates.

In contrast to the situation reported by FSNEP clients, 81% of physicians stated that they provide nutrition counseling “often” or “very often” to their chronic disease patients. Other studies\(^{9,28}\) have found lower nutrition counseling rates among physicians, although those studies did not concentrate solely on the counseling rate of chronic disease patients. It is expected that the nutrition counseling rate reported in this study would be high since physicians were not asked to comment on their counseling rate with non-chronic disease patients who may not need to receive dietary counseling.
Since physicians were more likely to provide nutrition counseling to their chronic disease patients if they had an in-house RD to assist in the counseling process, the presence of more RDs in physician’s offices would help increase the amount of nutrition counseling that patients receive during office visits. It can be concluded that RDs have a positive impact on physician’s nutrition practices.

There are several possible reasons for the discrepancies between the physicians’ and FSNEP clients’ reports on the amount of nutrition counseling provided. With the increased emphasis on preventive services to reduce costs in managed care, primary-care physicians are under greater pressure to provide preventive services, such as nutrition counseling. Although only one physician was enrolled in an HMO-staff model practice, a large percent were involved in a group practice. This could be an indication that many of these practitioners were employed by managed care companies since group practices are very prevalent within the managed care system and growing in number. Physicians may have reported a higher amount of counseling than is actually performed due to this pressure.

Correspondingly, FSNEP clients may have reported lower rates of nutrition counseling by physicians than was actually provided. One possibility is that these individuals simply forgot about instances when they had received nutrition information from their primary-care physician due to decreases in memory as a function of time or problems associated with the aging process. The clients’ average age was 68 years. During the pilot studies conducted by the principal investigator, some clients appeared unable to understand some of the survey questions, but still provided an answer to each question. Thus, the results from the FSNEP client survey must be accepted with some reservation due to the lack of appropriate screening of the clients for their ability to accurately respond to the questions.

Physicians may have had a different perception as to what constitutes providing nutrition counseling than what clients had. For example, physicians may have felt that providing a pamphlet on nutrition information constitutes providing dietary counseling, whereas clients
may not have perceived this action as constituting nutrition counseling.

The greater emphasis placed upon dietary counseling for chronic disease management versus prevention of chronic diseases was unexpected in view of the increasing emphasis on prevention in the health care profession. Other studies have not specifically looked at this issue. Malnourished patients were reported to receive the least amount of nutrition counseling in that over half of physicians stated that they “never/rarely” provide nutrition education to this group. This was surprising since these individuals are in great need of dietary guidance and the prevalence of this condition is relatively high within the older population. Research has shown that 30% to 60% of elderly patients suffer from some form of malnutrition.

**Preparedness to provide nutrition counseling.** Just over one third of physicians reported that they are not adequately prepared to provide nutrition counseling. Other studies have found that most physicians generally do not feel prepared to counsel patients on nutrition issues. Since there was a significant negative correlation between the physicians’ perceived level of preparedness and the amount of nutrition counseling they reported providing, it appears that many physicians are not confident in providing nutrition information and this has a direct negative influence on the amount of nutrition counseling they provide to patients. It is unknown how many of the physicians who perceived themselves as being unprepared utilize other health care professionals in their office to assist in the nutrition counseling process. Research has shown that physicians feel more confident in providing certain types of dietary education, such as information on reducing cholesterol levels, than other types. Thus, the particular chronic disease that patients have may influence whether or not they receive adequate nutrition counseling.

**Perception and utilization of physicians’ nutrition advice.** There was a fairly even distribution of the extent to which FSNEP clients reported they follow their physician’s nutrition advice with a range of “never” to “always”. Over 40% of clients stated that they
“never” or only “sometimes” follow their physician’s nutrition advice. DiMatteo and colleagues found similar results. This implies that many patients who are in need of dietary changes are continuing to eat poorly which can lead to the development of new chronic diseases and/or the deterioration of existing disorders.

Previous research has shown that patients who feel a physician’s advice is not adequate or clear are more likely not to follow that advice. Only half of the FSNEP clients perceived their primary-care physician’s advice to be “good” or “very good”, while slightly more than half indicated that they understand “most” or “all” of their physician’s nutrition advice. These results indicate that close to half of the clients felt that the nutrition advice they receive from their physician’s office could be improved.

Questions #12 and #13 on the client survey (see Appendix C), concerning the quality and clarity of their physician’s nutrition advice, had a high number of non-respondents or a response of “can not answer” (26% and 18%, respectively). Since one third of the FSNEP clients reported that they “never” receive nutrition advice from their primary-care physician (see Appendix C, question #4), an equal number of clients should have marked “can not answer” for these two questions. However, the interviewers (i.e. the FSNEP Program Assistants) were not specifically instructed to mark a response of “can not answer” on questions #12 and #13 if a client reported that he or she “never” receives nutrition information from his or her primary-care physician.

One concern is that patients are receiving non-specific nutrition advice from their physicians that is not tailored to their needs. For example, if patients are told to eat foods low in fat but are not told what types of foods fit this criteria, the instruction would be inadequate. In fact, three fourths of FSNEP clients indicated that they should be given more nutrition information by their primary-care physician. Based on this study’s data, it appears that clients want additional dietary information, whereas their physicians are providing them with little or no nutrition counseling. The nutrition information that physicians are providing to older, low-
income patients is clearly not adequate.

Physicians who provide little nutrition counseling should be making more referrals to nutrition education services since their patients want additional nutrition information. It appears that patients who need additional nutrition information the most, due to a lack of physician counseling, are not the ones being referred to outside nutrition education services.

The FSNEP clients reported that they were more likely to follow their physician’s advice if they perceived it to be understandable and adequate. If a physician’s nutrition advice is not perceived as being adequate by a patient, this advice likely will not have a positive effect on the patient’s dietary habits. Thus, it is very important that the nutrition information provided to a patient be viewed as adequate and understandable by that individual. Since older, low-income patients possess poor reading skills, the reading level of any written information provided must be taken into account. If it is not, the patient will not be able to understand or benefit from the information. Advice that is tailored to patients’ needs is more likely to motivate them to change their dietary habits.

**Role of patients’ socioeconomic situations.** Despite the importance of tailoring nutrition information to patients’ needs, two thirds of the physicians reported that they feel patients’ socioeconomic situations are “not important” or only “somewhat important” in determining the content of dietary advice. Levine et al. found that four fifths of physicians surveyed did not consider patients’ economic situations before making dietary recommendations. As a result, the nutrition advice provided to older, low-income adults may not be taking into account the foods that these patients can and cannot afford. For example, advice that a patient should purchase expensive, low-fat foods is unrealistic for an individual on a limited income. Thus, it appears that the nutrition advice provided by many primary-care physicians is not tailored to their patients’ specific needs. This, in turn, will lead to a lack of implementation by those patients.
On the other hand, FSNEP provides free nutrition education that is specifically tailored to meet the needs of individuals with limited resources. All written information used in FSNEP takes into account the reading level of this population. Furthermore, FSNEP Program Assistants are able to personally tailor the nutrition information to their clients’ needs since they have the opportunity to become familiar with each person’s life situation.

If physicians are going to structure their nutrition advice around an individual’s needs, they must be willing to discuss financial matters and any socioeconomic constraints that exist with their patients. Nearly all FSNEP clients stated that they “never” or only “sometimes” talk with their primary-care physician about their own financial situation. This lack of communication could be partially due to the clients’ beliefs that it is not appropriate for physicians to ask patients about their income. Nearly half of the clients expressed this attitude, whereas only one third stated that they feel it is appropriate for physicians to ask patients about their income status. Other studies have found that a majority of patients believe it is appropriate for such discussions to occur. However, physicians may be able to determine if a person is low-income by information in patients’ medical charts, such as Medicaid status. To be eligible for Medicaid, an individual must have a limited income. Since one third (19) of FSNEP clients reported using Medicaid to pay for physician services versus two thirds (37) who reported using Medicare, at least one third of the clients were easily identifiable as being low-income. All elderly individuals, regardless of income, can receive part A of Medicare and have the option of purchasing part B. Thus, information in a patient’s chart is only partially helpful in determining low-income status.

**NUTRITION REFERRALS BY PHYSICIANS**

**Referrals to nutrition education/counseling services.** Physicians may make referrals to outside professionals in order to provide the most comprehensive health care for their patients. Over half of physicians surveyed reported that they “sometimes” refer their patients with diet-related chronic diseases to RDs outside of their practice, while only one third reported making referrals to outside RDs on a regular basis. In this question (see Appendix
B, question #5a), the physicians were not provided with a “not applicable” answer space and thus some of the 15% of physicians who had an in-office RD may have responded that they “never/rarely” refer to RDs. However, upon removing the 15% of physicians who reported having an in-house RD from the data analysis, the frequency of referrals to RDs decreased slightly. Physician referral rates to RDs found in this study are similar to the rates found in other studies.12-14

Physicians who had been practicing medicine for a shorter time made more referrals to RDs. A possible explanation for this is that these physicians had greater exposure to nutrition information during their medical education than physicians who had been practicing for a longer time. This, in turn, may have led to a greater appreciation for the value of RDs. Even though the number of medical schools reporting a required nutrition course has been fairly stable over the past decade, there has been increasing pressure from the federal government to emphasis nutrition throughout the medical school curriculum.44 As a result, medical students have likely been receiving more exposure to nutrition in recent years. However, there was no significant correlation between the number of years in practice and physicians’ positive attitudes about nutrition or the amount of nutrition counseling physicians perform. Thus, a more positive attitude about nutrition, in general, by physicians did not appear to be the reason for more referrals to RDs.

The physicians who reported that they “never/rarely” refer to a RD may have felt that many patients can not afford such services and/or that insurance will not cover the cost. This may have dissuaded these practitioners from referring patients, especially low-income patients, to RDs. Also, rural areas tend to be under-served by RDs which would limit the number of such referrals. There are only 119 RDs in Southwest Virginia who are registered through the American Dietetic Association compared to 1,539 RDs in Virginia. Since the number of RDs in Southwest Virginia represents 8% of the total number of RDs in the state and this region comprises roughly one third of Virginia’s geographical area, Southwest Virginia is under-served by RDs (Cynthia Autterbury, personal communication). However, since 86% of
Physicians indicated that they had made at least one referral to a RD in the previous three months, the physicians did have knowledge of a RD in their area.

Physicians reported making very few referrals to community nutrition programs. Lack of knowledge of available services may be a possible reason as over half of physicians reported that they were not familiar with the available sources of nutrition education in their area, not including RDs. However, the collected data does not reveal the specific sources with which physicians were familiar. Results of analysis indicate that the longer physicians are in practice, the fewer referrals they make to community nutrition programs. Reasons for this are likely similar to the reasons discussed earlier concerning the fact that fewer referrals are made to RDs by physicians who have practiced medicine longer.

Only one third of FSNEP clients indicated that they had been referred to an outside nutrition professional or program by their primary-care physician. Since older clients were less likely to be referred to an outside nutrition education service and received less nutrition education during office visits, it can be concluded that these individuals receive less overall nutrition advice than younger individuals. Physicians may feel that their older patients are less likely to benefit from additional nutrition information, either through counseling or a referral source, since their chronic diseases and conditions are often more advanced, requiring more aggressive medical treatment.

Physicians were asked to specify any nutrition education services to which they had referred at least one patient in the previous three months, but the number of patients referred to these various sources was not obtained. In addition, the FSNEP clients were asked to identify the nutrition education services to which they had been referred by their primary-care physician over the previous five years. Over three fourths of physicians reported that they had referred patients to a RD, while less than one fifth of FSNEP clients reported that they had been referred to a RD. In fact, the health department was the only other source to which more than three FSNEP clients reported being referred. More than one third of physicians reported
referring at least one patient to home health services and private organizations/weight loss centers. Less than one fifth of physicians reported using WIC, social services or Food Stamp offices, health departments, Free Clinics, and emergency food sources as referral sources. Only two physicians had referred patients to Cooperative Extension services in the previous three months. This low referral rate verifies that physicians are not making referrals to free community nutrition education programs, such as FSNEP.

Upon removing the physicians who reported having an in-house RD from the data analysis, there was no significant change in the number of physicians who reported referring to an outside RD at least once in the previous three months. Thus, it can be concluded that some physicians who have an in-house RD are making referrals to outside RDs. However, the possibility that the physicians who reported having an in-house RD did not differentiate in the survey between referrals to their in-house RD and referrals to an outside RD must be considered.

It is unknown how many of the reported number of referrals to RDs included low-income patients. One explanation for the discrepancies between physicians’ and clients’ reports of RD referrals may be that physicians are mainly referring patients with higher incomes who can afford such services. Almost half of the physicians reported that they feel patients’ socioeconomic situations are “important” or “very important” in determining whether or not they refer to an outside RD. However, since most of the physicians’ patients were not low-income, the moderate referral rate to RDs can not be entirely explained by the inability of patients to pay for such services.

**Role of patients’ socioeconomic situations.** Another consideration concerning referrals to RDs is that physicians who reported feeling that patients’ socioeconomic situations are not important in determining such referrals did so because they are unaware of many of their patients’ situations or they simply do not care about such matters. The other referral sources utilized by physicians are not as financially inaccessible and thus a patient’s low income status
should not be a dissuading factor in determining referrals. Instead, many of these services, like Free Clinics, only accept low-income patients. However, physicians must either know or be willing to ask if a patient has a limited income before such referrals can be made. It was not surprising that WIC, emergency food sources, and extension services were not significant referral sources for physicians since they tend to make more referrals to RDs, hospital programs, and weight loss programs. The low use of Free Clinics by FSNEP clients was unexpected since Virginia has more Free Clinics than any other state in the United States. However, a majority of the FSNEP clients reported receiving Medicare, Medicaid, and/or private insurance which would make them ineligible for Free Clinic physician services.

Favorable and unfavorable attributes of nutrition education/counseling services. In response to questions about attributes of nutrition education programs that encourage or dissuade referrals, almost all the physicians stated that a low cost or free service is very important in determining whether or not they make referrals of low-income patients. Sowinski and colleagues found similar results in their study of physicians’ expectations of nutrition referral sources. Only half of physicians in this study indicated that the cost of a referral program and/or a lack of insurance reimbursement dissuades or prevents them from referring patients of all income levels to nutrition education services. These results illustrate that some physicians acknowledge that low-income patients can not afford all types of referral programs and must be referred to low cost or free services. However, this acknowledgment by physicians may not necessarily lead to a greater number of referrals to free community nutrition education services.

The next two most important reported attributes influencing nutrition referrals chosen by three fourths of physicians were the accessibility of the service to patients and a quick referral process. However, a much lower portion of physicians stated that services which are not easily accessible to patients and a referral process that is time consuming would dissuade their referral of patients of all income levels.
FSNEP is free to all participants and thus cost to the patient should not dissuade referrals to this education service. This program was initiated in Virginia in fiscal year 1996 by the Virginia Cooperative Extension. FSNEP provides free nutrition education to members of food stamp households headed by middle and older adults without young children, although in some locations younger clients also participate. The lesson series used teaches basic nutrition concepts, food economic skills, general health promotion, and the prevention and management of chronic diseases through nutritional means. All information is designed specifically for low-income individuals. FSNEP Program Assistants can provide the nutrition education in the client’s home, thus making the program easily accessible. A single phone call to a toll free number by either a physician or a member of his or her staff would be sufficient to enroll a patient in the Virginia FSNEP. Upon a physician’s recommendation, a patient could call the number and self-enroll. The characteristics of FSNEP may increase the possibility that physicians would make referrals to the program.

Other attributes chosen by physicians as important factors included providing follow-up reports to the physician’s office, personal knowledge of the program’s nutrition training and expertise, and personal knowledge of the program’s ability to work with low-income individuals. If a FSNEP/Physician referral system or collaboration is to be implemented, follow-up reports need to be provided to physicians by FSNEP Program Assistants. Also, Program Assistants would need to be further trained in dietary management of chronic diseases and conditions which would require a substantial time and resource commitment by FSNEP staff and leadership.

All other dissuading factors were chosen by less than half of physicians. Forty-two percent of respondents stated that there are few or no available sources of nutrition education in their area, while over half of physicians indicated that they are not familiar with the sources of nutrition education in their area. Obviously, physicians need to be educated on available nutrition education programs to which they can refer patients. Before this can be accomplished, appropriate written materials need to be developed that target physicians as
potential referral sources. Results from this study can be used to provide guidance in developing the content of publicity brochures directed at physicians.

Nearly one fourth of physicians stated that low patient compliance discourages them from referring to nutrition education services. However, most FSNEP clients stated that they would like more nutrition information given to them during physician office visits. The extent to which patients would be willing to participate in a community nutrition education program is unknown. Other research has shown that a significant number of elderly individuals will participate in nutrition education services if given the opportunity, especially if referred by an office-based primary-care physician.41

Very few physicians indicated that they were dissuaded from making referrals by a belief that their own office provides adequate dietary counseling or that it is a physician’s sole responsibility to provide dietary counseling. Only a few physicians indicated that they do not have confidence in the ability of existing programs to provide adequate nutrition education or that they are not convinced of the value of such services. Thus, physicians appear to feel that nutrition programs outside of their office are capable of providing adequate nutrition education and are valuable in this aspect. It is unknown which specific services physicians have confidence in. It may be that physicians’ confidence is directed more at RDs since almost half of physicians indicated that they were not familiar with available nutrition education services in their area, other than that of RDs. These positive attitudes about nutrition education services are not being acted upon in the sense that physicians do not make a large number of referrals to nutrition education services, as previously discussed. However, these positive attitudes may motivate some physicians to make more referrals to outside nutrition education programs upon learning of such services.