

THE UNIVERSITY OF CALGARY

A DESCRIPTION OF THE SELF-REPORTED NUTRITION COUNSELLING
ACTIVITIES OF CALGARY FAMILY PHYSICIANS AND
AN EXPLORATION OF THE FACTORS WHICH INFLUENCE THEM

by

Mary Sue Waisman

A THESIS

submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements for the
Degree of Master of Science

DEPARTMENT OF MEDICAL SCIENCE

CALGARY, ALBERTA

JANUARY, 1988

© MARY SUE WAISMAN 1988

Permission has been granted to the National Library of Canada to microfilm this thesis and to lend or sell copies of the film.

The author (copyright owner) has reserved other publication rights, and neither the thesis nor extensive extracts from it may be printed or otherwise reproduced without his/her written permission.

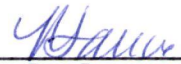
L'autorisation a été accordée à la Bibliothèque nationale du Canada de microfilmer cette thèse et de prêter ou de vendre des exemplaires du film.

L'auteur (titulaire du droit d'auteur) se réserve les autres droits de publication; ni la thèse ni de longs extraits de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation écrite.

ISBN 0-315-42553-9

THE UNIVERSITY OF CALGARY
FACULTY OF GRADUATE STUDIES

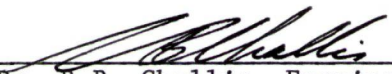
The undersigned certify that they have read, and recommended to the Faculty of Graduate Studies for acceptance, a thesis entitled "A Description of the Nutrition Counselling Activities of Calgary Family Physicians and an Exploration of the Factors that Influence Them", submitted by Mary Sue Waisman in partial fulfillment of the requirements for the degree of Master of Science.



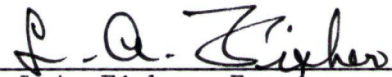
Dr. R. Sauve, Supervisor
Faculty of Medicine



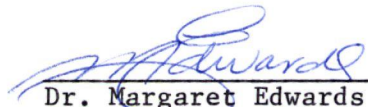
Dr. H. Bryant, Examiner
Faculty of Medicine



Dr. R.B. Challis, Examiner
Faculty of Medicine



Dr. L.A. Fisher, Examiner
Faculty of Medicine



Dr. Margaret Edwards
Faculty of Nursing

Date: February 23, 1988

ABSTRACT

This study described the self-reported nutrition counselling activities of 71 Calgary family physicians for 10 selected nutrition problems and explored the reasons why physicians engaged in varying types of counselling behaviors.

The physicians were interviewed by the investigator and first asked to complete a profile information sheet. Selected demographic characteristics were collected as well as physicians' individual perceptions of selected nutrition issues, including such items as their interest in the topic of nutrition, perceived importance of nutrition to disease prevention and treatment, and others. The participants were then presented with 10 different nutrition scenarios and asked to indicate which type of nutrition counselling behavior they usually practiced. The counselling behaviors included: provide counselling myself, provide some counselling myself and then refer elsewhere, refer elsewhere, or do not counsel, do not refer. Five of the problems were presented as if the patient were asking the physician for nutrition information, and five as if the physician had diagnosed a medical problem which warranted nutrition intervention.

The results showed that, given the opportunity, physicians reported that they provided counselling themselves 60% of the time. The next most frequent activity was to provide some counselling and

then refer (33%), followed by refer only (5%) and do not counsel, do not refer (1%). There were differences in counselling activities for patient-versus physician-initiated nutrition problems. Counselling behaviors also varied with physician sex, age, year of graduation from medical school, and physicians' perceptions of their preparedness to deal with nutrition issues and of the importance of nutrition to disease prevention and treatment.

The reasons offered most often for participating in the varying counselling activities involved the issues of the physician's perceptions of a) the importance of the counselling to the patient's health, b) their perceived competence to handle the nutrition counselling and c) their perceived responsibility to provide the nutrition information.

ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to Dr. R.S. Sauve for his guidance and dedication to this work. I am also grateful to my supervising committee members for their insight and for the many challenges they presented to me. Finally, I am grateful to the physicians who participated in this study. Their time, interest, and enthusiasm has made the task enjoyable and rewarding.

TABLE OF CONTENTS

	Page
ABSTRACT	iii
ACKNOWLEDGEMENT	v
LIST OF TABLES	viii
LIST OF FIGURES	xiv
CHAPTER	
I PROBLEM IDENTIFICATION	1
Objectives of the Study	2
II REVIEW OF SELECTED LITERATURE	3
Relevance of Nutrition to Human Health	3
Awareness of Nutrition among the North American Public	8
Sources of Nutrition Information for the Canadian Public	10
The Role of the Family Physician in the Provision of Nutrition Information to Patients	15
Physicians' Beliefs and Practices Regarding the Provision of Nutrition Information to Patients	17
Factors Influencing the Nutrition Counselling Activities of Physicians	22
III CONCEPTUAL FRAMEWORK	24
Transmission of Nutrition Information from the Provider to the Individual.	24
Factors Influencing Family Physicians' Decisions to Provide Nutrition Information	25
IV METHODS	32
Study Design	32
Development of Research Tools	32
Pretest	35
Research Subjects	36
Sampling Frame	36
Determination of Sample Size	37
Sample Selection	38

TABLE OF CONTENTS continued

	Page
Request for Participation	41
Questionnaire Administration	42
Response Rate	42
V RESULTS AND DISCUSSION	45
Respondents/Non-Respondents/Sampling Frame:	
Comparison of Selected Demographic Data	45
Demographic Data of Respondents:	
Sex, CCFP Membership, Age, and Year of	
Graduation from Medical School	47
Office Profile Information	49
Educational Background	62
Physicians' Individual Perceptions	66
Physicians' Responses to Patient Scenarios. . . .	100
Physicians' Responses to Patient vs	
Physician-Initiated Scenarios	104
Physicians' Perceptions of Nutrition	
'Counselling'	107
Physicians' Reasons for Participating in	
Varying Nutrition Counselling	
Activities	108
Referral Sources used by Physicians for	
Nutritional Counselling	120
Factors Affecting Physicians' Nutrition	
Counselling Activities	123
VI SUMMARY	148
General Discussion.	148
Implications for Future Research	151
REFERENCES	153
APPENDIX A Physician Profile Sheet	157
APPENDIX B Patient Scenarios	160
APPENDIX C Letter of Request for Participation	175

LIST OF TABLES

TABLE		PAGE
1	Reasons Spontaneously Offered by Non-respondents for not Participating	44
2	Comparison of Demographic Characteristics of Sample, Non-respondents, and Sampling Frame	46
3	Age Distribution of Study Participants . .	48
4	Type of Practice	52
5	Hours Worked per Week Seeing Patients in Office	53
6	Number of Patients Seen per Hour.	54
7	Perceived Adequacy of Time Available to Physicians for Counselling.	55
8	Weekly Work Patterns of Male and Female Family Physicians (hours).	56
9	Patients Seen per Hour by Male and Female Family Physicians	57
10	Perceived Adequacy of Time Available to Male and Female Physicians for Counselling	58
11	Hours Worked per Week by Physicians of Varying Ages	59
12	Patients Seen per Hour by Physicians of Varying Ages	60
13	Perceived Adequacy of Time Available for Counselling by Physicians of Varying Ages.	61
14	Route of Training to Family Medicine of Respondents	67
15	Physicians' Perceptions of the Quality of Nutrition Teaching at Their Medical School When They Were Students	68
16	Perceptions of the Quality of Nutrition Teaching in Medical Schools by Male and Female Family Physicians	69

LIST OF TABLES

TABLE		PAGE
17	Perceptions of the Quality of Nutrition Teaching in Medical Schools by Physicians of Varying Ages.	70
18	Perceptions of the Quality of Nutrition Teaching in Medical Schools of Physicians who Graduated from Different Medical Schools	71
19	Where Physicians Learned Most About Nutrition	72
20	Physicians' Perceptions of their Preparedness to Deal with Nutrition Issues	73
21	Perceptions by Male and Female Physicians of their Preparedness to Deal with Nutrition Issues.	74
22	Perceptions by Physicians of Varying Ages of Their Preparedness to Deal with Nutrition Issues	75
23	Perceptions by Physicians who Graduated from Different Medical Schools of their Preparedness to Deal with Nutrition Issues.	76
24	Physicians' Perceptions of the Importance of Nutrition to Preventing Disease . .	81
25	Physicians' Perceptions of the Importance of Nutrition to Treating Disease . . .	82
26	Male and Female Physicians' Perceptions of the Importance of Nutrition to Preventing Disease	83
27	Male and Female Physicians' Perceptions of the Importance of Nutrition to Disease Treatment	84
28	Perceptions of the Importance of Nutrition to Disease Prevention by Physicians of Varying Ages	85

LIST OF TABLES

TABLE		PAGE
29	Perceptions of the Importance of Nutrition in the Treatment of Disease by Physicians of Varying Ages	86
30	Perceptions of the Importance of Nutrition to Disease Prevention of Physicians who Graduated from Different Medical Schools	87
31	Perceptions of the Importance of Nutrition in the Treatment of Disease by Physicians who Graduated from Different Medical Schools	88
32	Physician Interest in Nutrition	89
33	Male and Female Reports of Personal Interest in Nutrition	90
34	Self-reported Interest in Nutrition by Physicians of Varying Ages.	91
35	Self-reported Interest in Nutrition by Physicians who Graduated from Different Medical Schools	92
36	Perceived Personal Overall Dietary Habits by Physicians.	93
37	Physicians' Perceptions of their Weight Status	94
38	Male and Female Physicians' Perceptions of their Proximity to Ideal Weight	95
39	Male and Female Physicians' Perceptions of their Personal Dietary Habits	96
40	Perceptions of Personal Overall Dietary Habits by Physicians of Varying Ages	97
41	Perceptions of Proximity to Ideal Weight by Physicians with Varying Ages	98

LIST OF TABLES

TABLE		PAGE
42	Topics on which Physicians Requested More Information.	99
43	Physician Responses to Patient Scenarios	102
44	Counselling Score of Physicians	103
45	Physician Responses to Patient Scenarios	105
46	Activities Physicians Consider as "Counselling" and "Some Counselling". . . .	109
47	Comparison of Activities Considered as "Counselling" when Counselling on Patient-Initiated vs Physician- Initiated Scenarios	110
48	Comparison of Activities Considered as "Some Counselling" when Counselling, then Refer on Patient-Initiated vs Physician-Initiated Scenarios	111
49	Primary Reasons for Action - All Scenarios	115
50	Primary Reasons for Action in Each Type of Activity	116
51	Primary Reasons for Actions: Patient-Initiated vs Physician- Initiated Scenarios	117
52	Other Reasons for Counselling - Individual Scenarios	118
53	Other Reasons for Counselling, then Referring-Individual Scenarios	119
54	Where Physicians Refer when 'Counselling, then Refer' for Individual Scenarios. . . .	121
55	Where Physicians Refer when 'Referring'	122

LIST OF TABLES

TABLE		PAGE
56	Counselling Activities of Physicians with and without CCFP Membership	124
57	Counselling Activities of Physicians With Varying Types of Medical Practices	129
58	Counselling Activities of Physicians who Work Full and Part-Time	130
59	Counselling Activities of Physicians with Varying Routes of Training to Family Medicine	131
60	Counselling Activities of Physicians who Graduated from Different Medical Schools	132
61	Counselling Activities of Physicians with Varying Perceptions of the Adequacy of Time Available for Counselling	133
62	Counselling Activities of Physicians with Varying Perceptions in the Quality of Nutrition Teaching in Medical Schools	134
63	Counselling Activities of Physicians with Varying Perceptions in their Over- all Dietary Habits	135
64	Counselling Activities of Physicians with Varying Perceptions Regarding their Proximity to their Ideal Weight	136
65	Counselling Activities of Physicians who See Varying Numbers of Patients per Hour	137
66	Counselling Activities of Physicians with Varying Interest in Nutrition	138
67	Counselling Activities of Male and Female Physicians	142
68	Counselling Activities of Physicians from Different Age Groups	143

LIST OF TABLES

TABLE		PAGE
69	Counselling Activities of Physicians Graduating in Different Years	144
70	Counselling Activities of Physicians with Varying Self-Perceptions of Preparedness to Deal with Nutrition Issues.	145
71	Counselling Activities of Physicians with Varying Perceptions of the Importance of Nutrition to Preventing Disease	146
72	Counselling Activities of Physicians with Varying Perceptions in the Importance of Nutrition to Disease Treatment	147

LIST OF FIGURES

FIGURE		PAGE
1	Transmission of Nutrition Information from the Provider to the Individual	29
2	The Health Belief Model	30
3	Proposed Model Demonstrating Factors Influencing a Family Physician's Decision to Provide Nutritional Information to Patients	31

CHAPTER I

PROBLEM IDENTIFICATION

Nutritional factors are known to be important in health maintenance, disease prevention and disease treatment. They have been linked with six of the ten leading causes of death in North America as well as with several other disease processes and medical conditions. Improvements in nutritional habits could have significant effects on disease morbidity and health care costs. In the United States, it is estimated that improvements in the nutritional status of individuals could result in a 20% reduction in prevalence and costs in most disease categories. In Canada, an estimated savings of 2.5 billion dollars could result from improvements in nutrition.

The Canadian public seems to be aware of the importance of a sensible diet and cites improved health as the major benefit of eating sensibly. The public receives nutrition information from a variety of sources. While access to information is extensive, the public frequently identifies the family physician as one of the major sources. In addition, the public views the provision of nutrition information to patients as one of the responsibilities of family physicians. Family physicians also believe that nutrition is important to health maintenance, disease prevention, and disease treatment and furthermore believe that they have a responsibility to provide nutrition information to their patients. While physicians hold these beliefs, however, there is little evidence regarding the extent to which family

physicians provide nutrition information to their patients. The purpose of this study, therefore, is to determine the extent to which family physicians provide nutrition information to their patients and furthermore to explore factors which influence these behaviors.

Objectives of the Study

This study is essentially descriptive in nature. The objectives of this study are to:

- 1) determine, via self-report, the extent to which family physicians provide nutrition information to their patients when asked questions by patients;
- 2) determine, via self-report, the extent to which family physicians provide nutrition information to their patients once the physician has diagnosed a medical problem which warrants nutrition intervention;
- 3) explore factors that influence the aforementioned behaviors.

CHAPTER II

REVIEW OF SELECTED LITERATURE

The purpose of the following literature is to provide supporting documentation for the rationale for this study. It will firstly provide the reader with general information regarding the importance of nutrition to human health and show that both the Canadian public and Canadian physicians hold this belief. It will further show that, despite the facts that, physicians believe that nutrition is important to health, that they perceive the provision of nutrition information to patients as their responsibility, and that patients expect to receive nutrition information from their physicians, there is inconclusive documentation regarding the extent to which physicians provide patients with nutrition information.

Relevance of Nutrition to Human Health

Nutrition has been described as the relationship of food to the well being of the human body.⁽¹⁾ The science of nutrition is complex and is based on the fundamental principles of chemistry, biology, biochemistry, microbiology, anatomy, and physiology. The practice of nutrition is equally complex and is dependent upon the application of the principles of many sciences and disciplines including agriculture, food technology, sociology, economics and education. Both the science and practice of nutrition exist for and attempt to contribute to a more secure life, relatively free of disease and delayed mental and physical

development.

The science of nutrition emerged amidst the many scientific discoveries of the eighteenth century. The outstanding feature in its relatively short history is that the application of nutrition has continually broadened. In the years prior to World War I, available nutrition knowledge in North America was directed toward the prevention and treatment of dietary deficiency diseases, e.g., ascorbic acid for the prevention and treatment of scurvy. With continued success in isolating vitamins and minerals, it soon became feasible to attack nutrient deficiency problems through the addition of nutrients to the food supply. Nutrient deficiency diseases soon ceased to be major health problems in North America, but the scope of nutrition continued to broaden. The focus of contemporary nutrition research is markedly different from that of the early decades of the century. It is, however, equally intense as investigators seek to explore the complex interactions of personal dietary habits and susceptibility to and treatment of many disease processes.

The recent massive research interest has unfolded an enormous body of scientific data that links diet with six of the leading causes of death in North America including heart disease, cerebrovascular disease, arteriosclerosis, cancer, adult-onset (Type II) diabetes, and alcohol induced cirrhosis.⁽²⁾ The role of dietary factors in the prevention of coronary heart disease and cancer will now be discussed.

Coronary heart disease (CHD) is responsible for more than half a million deaths each year in the U.S., more deaths than all forms of

cancer combined.⁽³⁾ Among the many risk factors for CHD is high blood cholesterol levels. The evidence supporting a causal relationship between blood cholesterol levels and CHD comes from a wealth of congruent results of genetic, experimental, pathologic, epidemiologic, and intervention studies. With such a relationship established, the National Institutes of Health Consensus Development Conference Statement on Lowering Blood Cholesterol has recommended that all men, women, and children over age two should shift from the typically high fat North American diet to one that is lower in total fat.⁽³⁾

Nutritional factors are also thought to play a role in the prevention of cancer, the second leading cause of death in North Americans. Numerous epidemiological findings have associated the intake of a high fat or low fiber diet with an increased risk of developing cancer of the colon, breast, and prostate.⁽⁴⁾ Other investigations are also underway aimed at examining the relationship of numerous micronutrients to carcinogenesis, e.g., ascorbic acid and α -tocopherol as inhibitors of the known carcinogen, nitrosamine; retinoids in the prevention and/or treatment of epithelial cancers. Based on available data, the committee on Diet, Nutrition, and Cancer of the U. S. National Academy of Sciences has made four nutritional recommendations aimed at reducing cancer incidence.⁽⁴⁾ While they are not universally accepted by some experts on the subject, they are endorsed by a substantial proportion and again represent the potential role that dietary factors may play in the disease process.

Dietary factors have also been shown to play a role in the prevention and/or treatment of several other disorders or conditions. While rarely life threatening, gastro-intestinal disorders, osteoporosis, dental cavities, low birth weight, and obesity are serious health problems in North America.⁽²⁾ Let us examine the first two problems more closely. There is a wide spectrum of conditions and diseases that comprise gastro-intestinal (GI) disorders. Since all foods make contact with the GI tract, it is easy to understand why disturbances to the GI tract may interfere with nutrient digestion and/or absorption, and conversely, it also seems feasible that foods may have a variety of effects on the GI tract. A good example of how a GI disease process adversely affects an individual's nutritional status is celiac disease. Celiac disease affects primarily the mucosa of the small intestine in which the villi become atrophied and flattened producing a decreased absorptive surface. The result is malabsorption of both macro- and micronutrients and subsequent under-nutrition.⁽¹⁾ Upon institution of a gluten free diet, in most affected individuals, eventual normalization of the villi occurs along with improved nutritional status. A prime example of how food affects the GI tract is constipation. While the condition has many causes, one of the most common is insufficient dietary fiber. Once diagnosed as being functional in origin, the most common treatment is increased dietary fiber.

One of the most intensely studied conditions today is osteoporosis. Numerous studies have shown that individuals, particularly women, with lifelong adequate levels of calcium intake experience significantly less osteoporosis than those with an inadequate calcium

intake. While dietary factors are not solely responsible for the condition, the suggestion was set forth by the U. S. Osteoporosis Consensus Panel in 1985 that an adequate calcium intake was among the most promising approaches to the prevention and treatment of osteoporosis.⁽⁵⁾

The wealth of nutrition research that demonstrated the important role of dietary factors in the prevention and treatment of many diseases led to the adoption of nutritional recommendations by Health and Welfare Canada in 1977 designed to maintain and improve the health of the Canadian population.⁽⁶⁾ Similar recommendations were set forth in 1977 in the U. S. as the Senate Select Committee on Human and Nutrition Needs presented dietary goals for the nation.⁽⁷⁾ More recently, the U. S. Public Health Service has formulated an agenda for the nation in preventive health services, health protection, and health promotion. Improved nutrition represents one of 15 priority areas outlined to help improve the health of adults and reduce deaths among people aged 25-64 by at least 25% by 1990.⁽⁸⁾

Provided the North American public heeds the messages of the nutrition researchers, improved dietary habits could have significant effects on disease morbidity and health care costs. In the U. S., the Senate Select Committee on Nutrition and Human Needs estimated a 20% reduction in incidence, prevalence and costs in most disease categories.⁽⁹⁾ In Canada, an estimated health care savings of 2.5 billion dollars could result from improvements in nutrition.⁽¹⁰⁾

The preceding information provides but a few examples of how dietary habits play a role in disease prevention and treatment and how improvements in nutrition may reduce both disease morbidity and health care costs.

Awareness of Nutrition among the North American Public

In Canada, public awareness of the importance of nutrition to health seems to be high. The Active Health Report, the first report of the extensive Health Promotion Survey conducted in 1985 by Health and Welfare Canada, revealed that an average of 65% of adult Canadians surveyed felt certain foods should be limited or eaten more often for the sake of health.⁽¹¹⁾ It furthermore indicated that 67% of the respondents felt that their health could be improved by changing their eating habits. The report also revealed that nutrition was the topic mentioned most often when respondents were asked on which specific health topics they wanted information. The Nutrition Concepts Study of 1979 further substantiates Canadians' awareness of nutrition. It revealed that the majority of respondents (80%) felt a sensible diet was important to them personally.⁽⁵⁾ Better health was cited as the main benefit from practicing sensible eating habits. Among selected subgroups, high awareness of the importance of nutrition to health also appears to be present. A 1986 survey of female recreational athletes in Canada revealed that the majority of respondents (both marathon runners and fitness class participants) had a high degree of interest in nutrition and furthermore that a high percentage expressed a desire for more nutrition information.⁽¹²⁾ In the U. S., several reports

have also demonstrated high public awareness of the importance of nutrition to health maintenance, disease prevention, and disease treatment. The General Mills American Family Report 1978-79⁽¹³⁾ showed that several dietary issues were viewed by American families as very serious health threats including overweight, cholesterol, fats, and food additives. In addition, 25% of the responding family members reported that they were eating more nutritiously in an effort to decrease health hazards. The U. S. Surgeon General's Report on Health Promotion and Disease Prevention⁽¹⁴⁾ also noted increased attention being paid by the American public to nutrition in an effort to improve health. Among the dining-out American public, the National Restaurant Association reported that 77% of the restaurant patrons surveyed said they are more interested in nutrition now (1985) than they were one year ago. Their survey also revealed that 75 to 80 percent of surveyed patrons rated nutrition as 'somewhat important' to 'very important' in their decision to eat out.⁽¹⁵⁾

With respect to the nation's leading cause of death, cardiovascular disease, (CVD), a United States nationwide random survey in 1982 revealed that public perception of the possible relationships between diet and CVD was high.⁽¹⁶⁾ More than 75% of the respondents recalled hearing that hypertension may be related to diet, with over half being aware specifically of the possible link with dietary intakes of salt or sodium. About half of the respondents had heard of dietary links with other types of CVD including intakes of dietary fats and cholesterol. A more recent study of Oregon families indicated that the

majority of respondents recognized the association between CVD and dietary risk factors.⁽¹⁷⁾

It appears, therefore, that not only is nutrition important to disease prevention and treatment, but furthermore that the North American public seems to be aware of the importance of nutrition to health.

Sources of Nutrition Information for the Canadian Public

The provision of comprehensive nutrition information to the Canadian public is an extremely difficult task and one for which there presently is no single, coordinated effort. Rather, in Canada, the responsibilities for food, nutrition, and agriculture are assigned to a variety of government areas, both provincial and federal.⁽¹⁸⁾ The nutritional status of Canadians is indeed a concern of the Canadian government, as evidenced by several government reports and policies over the last 15 years. The Nutrition Canada Survey (1970-1972) was the first extensive review of the nutritional status of Canadians undertaken as the result of an awareness that malnutrition (either under, over or poor nutrition) may be contributing to morbidity and hence escalating health care costs. While the results of this survey are now likely outdated due to changes in food consumption over the last 15 years, the fact that many Canadians were less than optimally nourished served to identify nutrition, as a 'National Priority'.⁽¹⁹⁾

Since the completion of the Canada Nutrition Survey, many subsequent reports and papers have continued to identify adequate nutrition as a key factor in maintaining optimum health. These reports include: National Council on Welfare Report (1973); Lalonde Position Paper (1974); Report of the Committee on Diet and Cardiovascular Disease (1976); Nutrition Education Role Call (1978); Nutrition and Health in Canada (1979); and the Health of Canadians (1981). Clearly, the federal government has expressed a concern regarding the nutritional status of Canadians.

To complicate further the issue of the provision of nutrition information to the Canadian public, many other groups and organizations include nutrition education as part of their mandate. The provincial health departments, the food industry, professional groups, the mass media, and non-profit organizations, all participate in nutrition education activities. For example, one of the goals of the Calgary Health Services of Alberta is to motivate the community and individuals to adopt healthy lifestyles.⁽²⁰⁾ The Nutrition Division of Calgary Health Services of Alberta assists in the provision of the nutrition component of this goal. Two of their four main objectives are: 1) to ensure that the nutrition needs of people in each age group in the well population are effectively addressed through on-going community health nutrition education programs, and 2) encourage both the identification of people at nutritional risk and implement appropriate interventions.⁽²⁰⁾ To accomplish these objectives the Nutrition Division offers several nutrition education programs to groups within the Calgary area as well as one-to-one counselling to individuals who are at nutritional risk.

To cite an example of nutrition education from non-profit organizations, both the Canadian Heart Foundation and the Canadian Cancer Society have designated public education (including nutrition education) about heart disease and cancer as priority areas.(21, 22) In fact, for 1986, one of the priorities of the Canadian Cancer Society was to increase public awareness about the potential role of dietary factors in the prevention of cancer.(21)

The provision of nutrition information to the public is also one of the goals of the Canadian Dietetic Association.(23) This goal is accomplished in diverse ways including educational sessions in schools, hospitals, and at public forums. In addition, one-to-one counselling in hospitals and medical clinic settings is a prime avenue for the dissemination of nutrition information by dietitians to the public.

One cannot overlook the efforts and impact of the mass media on nutrition education. The following example demonstrates how a food company borrowed a health message from a government (with permission) and devoted millions of dollars to dissemination of the information via television. The item being marketed (a high fiber cereal) was aligned with the health message that increasing dietary fiber or roughage could have beneficial effects on health. The impact of the campaign on health knowledge was remarkable. Prior to the campaign, a survey by Food and Drug Administration revealed that only 9% of respondents when asked via open-ended question, identified fiber as a food that may help prevent cancer. After the campaign, this figure increased to 32%.(24)

Clearly, many agencies and organizations actively engage in the provision of nutrition information to the public, and perhaps justifiably so, since there is no one agency or government with this designated responsibility. The question now to be asked is, from what sources do the Canadian public actually receive nutrition information?

The public indicates that they receive nutrition information from a variety of different sources. One of the objectives of the Nutrition Concepts study conducted by Health and Welfare Canada in 1979 was to determine from what sources individuals obtain nutrition information.⁽⁶⁾ A random sample of the Canadian public was surveyed and the results on this objective indicated that family members and schools were mentioned most frequently, followed by magazine articles, booklets, and physicians. Among health professionals, the physician was most often cited as the source of nutrition information.

Surveys of selected subgroups revealed that their sources of nutrition information also varied greatly. For example, a majority of female marathon runners and fitness class participants revealed that they obtained nutrition information from books or magazines, while few obtained information from health professionals;⁽¹²⁾ male college athletes obtained nutrition information most frequently from their families, college health courses, and sports coaches but rarely from health professionals;⁽²⁵⁾ middle-aged female supermarket shoppers most frequently obtained nutrition information from television and rarely from health professionals;⁽²⁶⁾ middle-aged blue-collar employed men received nutrition information from newspapers and magazines but

rarely from health professionals.⁽²⁷⁾ In contrast, the following subgroups most frequently cited the physician as their source of nutrition information. Surveys of predominately young urban women,⁽²⁸⁾ Canadian mothers with infants,⁽²⁹⁾ and patients attending a Kentucky medical center,⁽³⁰⁾ all cited the physician most frequently as their source of nutrition information.

It is clear that the sources from which the Canadian public receives nutrition information are diverse, yet, it is unclear what specific factors determine from which source an individual receives nutrition. A closer look at the previous studies does suggest, however, that it may be the person's specific situation that determined his or her information sources. For example, a new mother receives nutrition information from her physician, but as she moves through the lifecycle and becomes an active participant of fitness classes, she may receive information more frequently from magazines, books, etc. Thus, the many agencies, institutions, governments, and health professionals all may be sources of nutrition information for individuals relative to their unique life situation.

Because this study focuses on physicians' practices in providing nutrition information to their patients, it is of interest to note that they are indeed frequently cited as sources of nutrition information. Furthermore, the following evidence suggests that many individuals believe it is indeed the physician's responsibility to provide nutrition information to patients. In the study by David and Boldt at the Kentucky Family Medical Center,⁽³⁰⁾ the authors reported that 58% of

the respondents expected their doctor to ask them questions related to daily life habits (including dietary practices) which may affect a patient's health. Hyatt⁽³¹⁾ reported strong agreement among patients and their physicians (90%) that a family physician should encourage patients to take steps to preserve health (including improved nutrition). He further reported strong agreement between the two groups (75%) that nutrition issues should be handled by the family physician without referral to external sources.

The Role of Family Physician in the Provision of Nutrition Information to Patients

From the previous sections, it became apparent that the Canadian public receives nutrition information from various sources, including family physicians. That the Canadian public receives nutrition information from a variety of sources is not unexpected since many organizations include nutrition education in their mandate and daily activities. That the Canadian public receives and expects to receive nutrition information from their family physician is also not unexpected, since, as the following evidence shows, family physicians have both the opportunity and responsibility to do so.

Dealing first with the issue of opportunity, the family physician's office can be a key environment for providing nutrition information since patients visit doctors frequently, often for disorders in which nutritional factors may play a key role. The average Canadian visits a physician five times annually.⁽³²⁾ An

individual family physician can expect to see at least 70% of all his patients annually and meet at least one member of more than 90% of all families in his/her practice.⁽²³⁾ Furthermore, some of the most common reasons for consultation in the average family include those for which nutrition has been involved in the etiology of the problem or will be useful in the treatment of the disease. The common reasons for consultation include hypertension, obesity, cerebrovascular disease, constipation, and diabetes.⁽³⁴⁾

Turning attention next to the issue of responsibility, the basic job description of the family physician includes the promotion of health and treatment of patients affected with disease.^(35, 33) Since dietary habits are known to play a role in both prevention and treatment of many diseases, it seems reasonable that the provision of nutrition information by physicians to patients fits into the physician's job description. Additional impetus for physicians to engage in activities to help prevent disease arose from the document, "New Perspective on the Health of Canadians" issued in 1974 by the Department of National Health and Welfare.⁽³⁶⁾ The primary theme of the document suggests that the incidence of sickness can be reduced by conscious preventive measures and that a multi-faceted prevention approach is essential. Physicians, as members of the health care organization, are key players in disease prevention in their patients. At this point, it could be argued as to what 'provision of nutrition information' really means. The strictest interpretation is the physician personally delivering the nutrition information, either verbally, in written form, via demonstration, or via other communication

processes. A less strict interpretation is the physician either doing the above, or referring the patient somewhere else for additional information, or both. The extent to which the family physician participates in the aforementioned activities when posed questions by patients or after identifying a medical condition for which nutrition is a part of the treatment was indeed the focus of this study.

Physicians' Beliefs and Practices Regarding the Provision of Nutrition Information to Patients

There are many reports indicating that family physicians perceive the dissemination of nutrition information as an important component of their interactions with patients. The Ontario Nutrition Information Needs Assessment Survey⁽¹⁸⁾ reported that 97% of general physicians surveyed either agreed or strongly agreed that providing nutrition information and advice should be part of the physician's responsibility. This survey, however, had a very low response rate of 17%, and the findings, therefore, must be interpreted with caution. Hyatt⁽³¹⁾ reported high agreement between family physicians and their patients (90%) that physicians should encourage a patient to take steps to preserve his or her health including lifestyle habits relating to smoking, exercise, and weight control. The author further reported agreement between the two groups (75%) that family physicians should handle patient nutrition problems. Wechsler et al⁽³⁷⁾ surveyed primary care practitioners (general practitioners, family practitioners, and internists) in Massachusetts to assess the physician's role in health promotion activities. There was strong agreement among physicians from

all three specialties that it was very important for the average person to eliminate smoking, avoid excess calories, be knowledgeable about drug contents and side effects, and moderate alcohol use. General and Family Practitioners were much more likely than internists to believe that these habits were very important for promoting the average person's health. The authors furthermore reported that 74% of the responding physicians felt it was definitely a physician's responsibility to educate patients on the lifestyle risk factors for disease, including smoking, alcohol, drugs, stress, diet, and exercise. Sobal et al⁽³⁸⁾ examined physicians' beliefs (including family/general practitioners, internists and obstetrician/gynecologists) about their perceived importance of 25 health promotion behaviours. The results were very similar to the Massachusetts study. Overall, all groups believed that most of the 25 practices were important for the average person. Avoiding excess calories and eating a balanced diet were ranked third and fourth in order of importance. The authors further commented that physicians were in the best position to assist their patients in achieving lifestyle changes. With regard to specific nutrition related diseases, Kottke et al⁽³⁹⁾ reported that 62% of family physicians surveyed in the Minneapolis region either agreed or strongly agreed that it was appropriate to give nutritional advice regarding the prevention of coronary heart disease even if patients were in the physician's office for reasons other than heart-related complaints. On the issue of anorexia nervosa and bulimia, Steiger et al⁽⁴⁰⁾ reported that family physicians were in a key position for early detection and prevention of these eating disorders. On the issues of obesity^(41,42), constipation⁽⁴³⁾, and atherosclerotic heart

disease,⁽⁴⁴⁾ there are also reports that physicians must be more active in treating these diseases or conditions with the aid of nutrition counselling.

Physicians also believe that they should possess specific nutritional skills to be able to deal adequately with patients' nutritional needs. Gjerde et al⁽⁴⁵⁾ reported that family physicians rated 29 of 40 nutritional skills as being very important for them to possess to deal adequately with patients' nutrition education needs, reflecting here again that physicians believed that they play an important role in the dissemination of nutrition information to their patients.

There is clearly substantial evidence that family physicians believe that the provision of nutrition information to their patients is both important to the patient's health and an important component of their interaction with patients. There is limited useful evidence, however, on the extent to which physicians actually provide nutrition information to their patients. The criticisms of the existing literature stem primarily from the fact that the studies available are likely not representative of the practices of family physicians. This is due to their poor response rates, non generalizability to all nutrition issues, and lack of detail regarding questions asked.

The Ontario Nutrition Information Needs Assessment Study⁽¹⁸⁾ reported that the majority of physicians frequently or very frequently provided nutrition information to their patients on the topics of weight control, cardiovascular disease, pregnancy, and general

nutrition. These results, however, must be interpreted very cautiously as the response rate to this survey was only 17% and perhaps not representative of the target population. Modrow et al⁽⁴⁶⁾ also attempted to determine the nutrition counselling practices of physicians to patients by mailing questionnaires to 256 family physicians. They reported that nutrition counselling practices varied with the type of medical problem presented. Nutrition counselling was provided on a regular basis to pregnant women by 58% of the respondents. In contrast, patients with hypertension or other cardiovascular diseases received counselling on a regular basis from less than 20% of the respondents. Here again, however, these results must be interpreted cautiously as the response rate was only 25%, less than 20% of which were family physicians. The results, therefore, may not be representative of the target population (all physicians) and even less likely representative of the practices of family physicians. Thus, while the results of these two studies suggest that physicians indeed frequently disseminate nutrition information to their patients, their poor response rates prevents them from contributing significantly to the body of knowledge on this subject.

Otradovec et al⁽⁴⁴⁾ reported on the nutrition counselling activities of physicians for patients with cardiovascular disease. The investigators examined charts of inpatients and outpatients at the University of Missouri Hospital and Clinic (Departments of Internal Medicine, Family Practice, and Pediatrics) to assess how often cardiovascular disease risk factors were assessed and modified. In all three departments, even when cardiovascular disease risk factors were

identified in the patients, there was little evidence from the medical record that attempts were made by the staff to encourage inpatients or outpatients to modify these risk factors. While the results may appear discouraging to some, in fact, the study fails to give an accurate account of physicians nutrition counselling practices for the following reasons. It was essentially a chart review which may not be reflective of the actual interactions that took place between health care provider and patient. In addition, the focus of the study was to assess documentation of attempts at risk factor modification, but was not concerned with which health professional was documenting the information. In the analysis, there is no distinction made on the basis of which health professional was documenting or not documenting the information. The study, therefore, has limited usefulness in describing nutrition counselling practices of family physicians.

Wells et al⁽⁴⁷⁾ examined selected health promotion activities (advice on smoking, weight control, exercise, and alcohol) of California physicians from the specialties of family practice, internal medicine and surgery. They reported that 55% of all family physicians provided weight counselling oriented to primary and tertiary prevention. While noteworthy, the study dealt solely with physicians promoting weight control and failed to deal with other nutrition problems. It would not be suitable to suggest that these results are representative of physicians' behaviours in the provision of other nutrition information to patients.

The final study reviewed here focuses on selected health promotion activities of physicians and has limited usefulness in describing physicians' practices in providing nutrition information to patients due to the lack of specificity in the nutrition questions they addressed. Wechsler⁽³⁷⁾ reported that 58% of all family physicians surveyed and 38% of all general practitioners asked their patients questions regarding "diet". It is unclear, however, what this means since there is a wide range of questions that may relate to "diet".

While each of the previous studies had good intentions, their results have limited usefulness to help determine the practices of physicians in providing nutrition information to patients.

In summary, from the preceding evidence, it seems that family physicians and their patients expect family physicians to provide nutrition information to patients. There is limited useful evidence, however, regarding the extent to which family physicians actually engage in these activities.

Factors Influencing the Nutrition Counselling

Activities Of Physicians

A physician's decision to provide nutrition counselling to patients may be influenced by several factors. Previous studies have demonstrated that physicians are more likely to provide nutrition information on selected topics to patients when they perceive they have sufficient time for counselling or possess sufficient nutrition

knowledge to deal with the issue.(9,48) In addition, physicians who have better personal health habits are more likely to provide nutrition information.(38) In contrast, physicians are less likely to counsel when they perceive that the patient is uninterested in acquiring nutrition information.(39) These factors are important only for selected nutrition issues and are likely not indicative of the entire spectrum of influencing factors.

From informal discussions with Calgary family physicians, it was also suggested to the writer that physician age, sex, type of practice, personal beliefs regarding the importance of nutrition to disease prevention and treatment, as well as personal interest in nutrition may also be factors influencing a physician's behaviour in the provision of nutrition information. The writer is also interested to explore whether or not counselling activities of graduates from various medical schools differ, with particular attention to University of Calgary graduates. All of the aforementioned will be studied in this investigation.

CHAPTER III

CONCEPTUAL FRAMEWORK

There are two conceptual frameworks pertinent to this investigation. The first presents a model for the transmission of nutrition information from the provider to the individual, and the second presents a model to explain the factors that may influence family physicians' decisions to provide nutrition information to their patients.

Transmission of Nutrition Information from the Provider to the Individual

Effective intellectual communication is an indispensable skill, for it is the ability to speak and write in a clear, concise, organized manner so that receivers can understand intellectually what has been said.⁽⁴⁹⁾ As previously documented, many individuals and groups view the "communication" or "transmission" of nutrition information to the public as part of their responsibilities. As demonstrated in Figure 1. (p. 29), professional organizations, lay groups, the media, and health care providers, are some of the major providers of nutrition information to individuals. These groups receive their nutrition information from a variety of sources, including each other, and transmit information specific to their objective or specialty to the public. Note, however, that the information they receive is not exclusive to their organization, and thus the same information may be

available from a variety of sources. It is this "communication" or "transmission" of nutrition information from a sub-group within the "health care" providers group, the family physician, to the individual that is the focus of this study.

The extent to which transmissions of nutrition information from physician to patient take place were determined by asking physicians what action, if any, they generally took when presented with patient scenarios for which nutrition information was warranted. (refer to Methods - Development of Research Tools).

Factors Influencing Family Physicians' Decisions to Provide Nutrition Information

As previously noted, there are several factors which may influence family physicians' behaviours in the provision of nutrition information to their patients. The proposed model that helps to explain these behaviors parallels the health belief model developed by Becker.⁽⁵⁰⁾ Just as key variables are involved in an individual's decision to take action against disease, so too, it is likely that key variables are involved in the family physician's decision to provide nutrition information to patients that will help to maintain health, or treat disease. The standard Health Belief Model is shown on page 30. (Figure 2)⁽⁵⁰⁾ and the newly developed version proposed for this study is shown on page 31 (Figure 3). As seen in the proposed model, selected individual perceptions and modifying factors are potential factors that may influence the family physician's decision to provide

nutrition information. Further explanation of these factors will now be presented.

Individual Perceptions

. Physician's Perceived Importance of Nutrition to Health

This refers to the physician's perception of how important nutrition in general is to the overall health of individuals. Respondents will be asked to rank on a five part scale 1) their perception of how important or unimportant nutrition is to preventing disease and 2) their perception of the relative importance of nutrition to treating disease.

. Interest in Nutrition

This refers to the overall interest of the individual physician in the general topic of nutrition. Respondents will be asked to rank on a five part scale their overall interest or lack of interest in the general topic of human nutrition.

. Perceived Personal Dietary Habits

This refers to physicians' perceptions of their nutritional status. Physicians will be asked to indicate: a) their perceived weight status on a five part scale ranging from very underweight to

very overweight; and b) their perceived dietary habits ranging on a five part scale from excellent to poor.

For the aforementioned individual perceptions, it is proposed that physicians who perceive nutrition as important to health, are interested in the topic of nutrition, perceive themselves as having good dietary habits, or as being of normal weight will provide nutrition information more frequently than their counterparts.

Modifying Factors

. Age of Physician

The physician will be asked to write down the year of his or her birth. It is proposed that younger physicians will provide nutrition information to patients more frequently than older physicians.

. Sex of the Physician

It is unknown at this stage what effect, if any, the sex of the physician will have on the provision of nutrition information to the patient.

. Type of Practice

The type of practice refers to the overall format of the physician's medical practice. Here, physicians will be asked to identify

if they are in solo practice, or if they belong to a partnership, group, or other type of practice. It is unknown if the type of practice will affect the provision of nutrition information to patients.

. Time Available for Providing Nutrition Information

Physicians will be asked to indicate on a five part scale their perceptions regarding the adequacy of time available in their present medical practice for providing counselling to patients. It is proposed that those who perceive a shortage of time available will, in fact, provide nutrition information less frequently.

. Prior Nutrition Education

Physicians will be asked to indicate:

- a) medical school from which they graduated
- b) type and location of post-graduate education

It is feasible that differences in medical education may affect the provision of nutrition information by physicians to patients.

. Preparedness to Deal with Nutrition Issues

Physicians will be asked to indicate how well prepared they feel to deal with nutrition issues in their present medical practices. It is proposed that those who perceive themselves as well prepared will provide information more frequently.

FIGURE 1:

TRANSMISSION OF NUTRITION INFORMATION FROM PROVIDER TO THE INDIVIDUAL

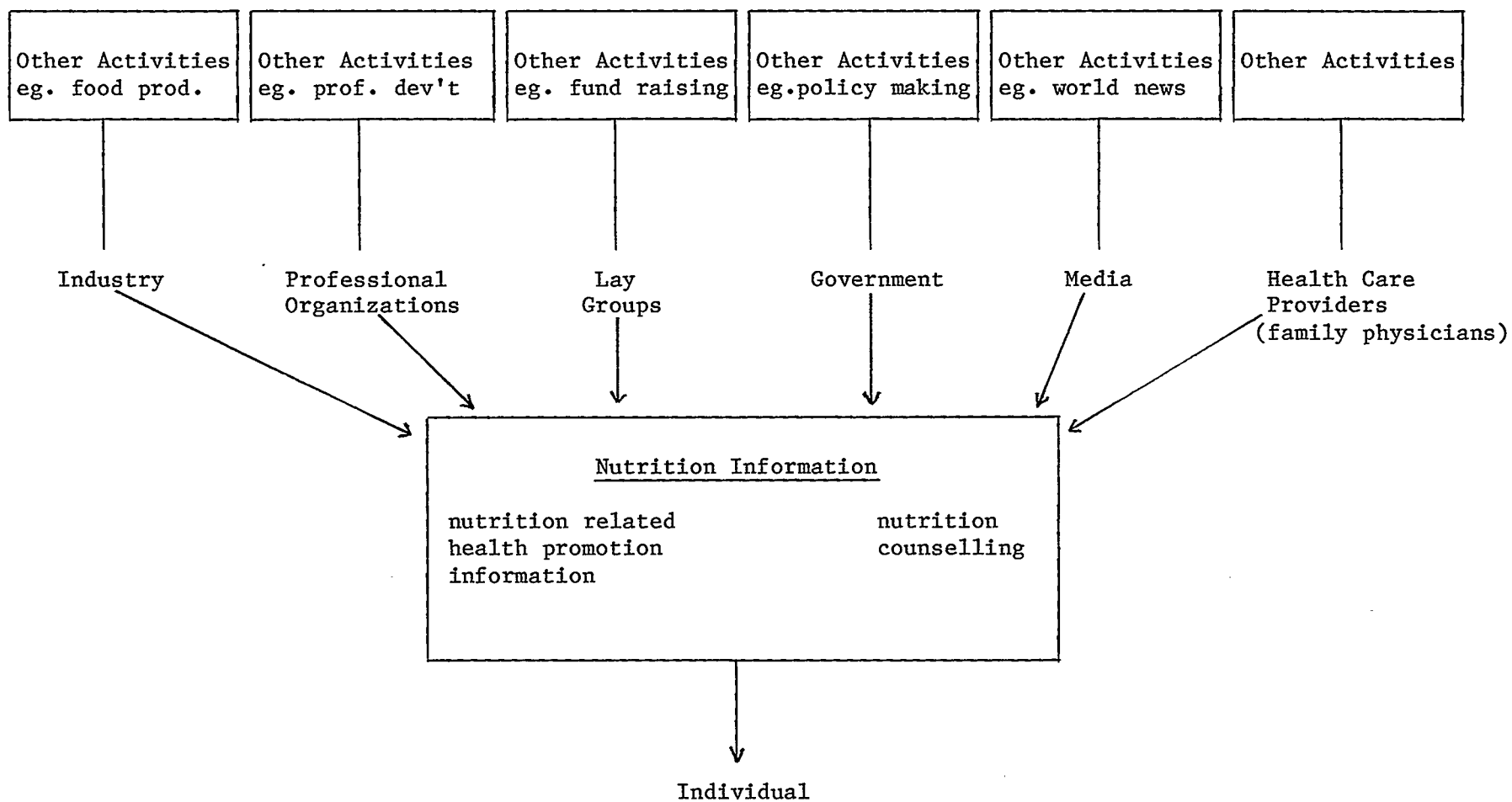
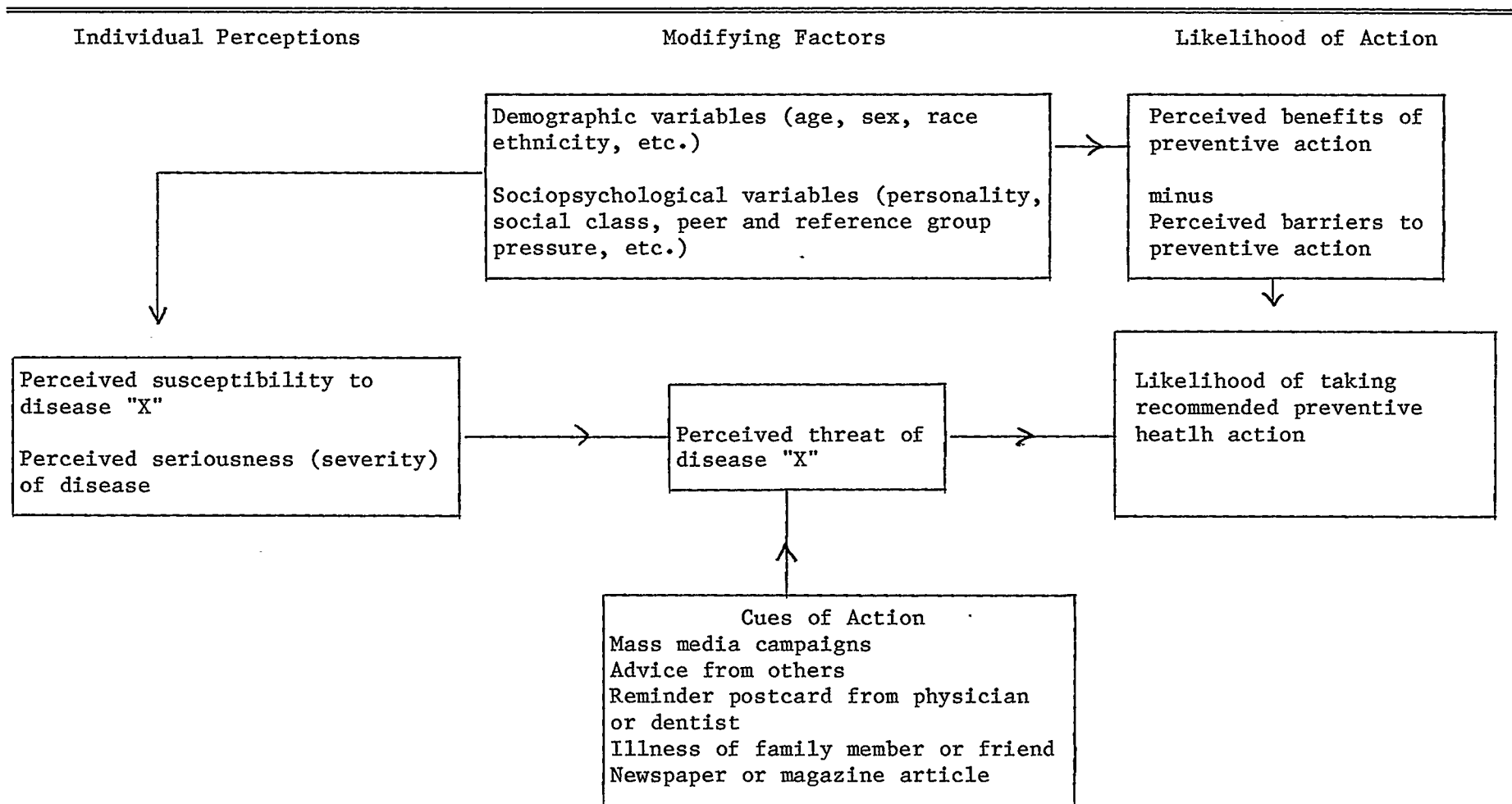


FIGURE 2:

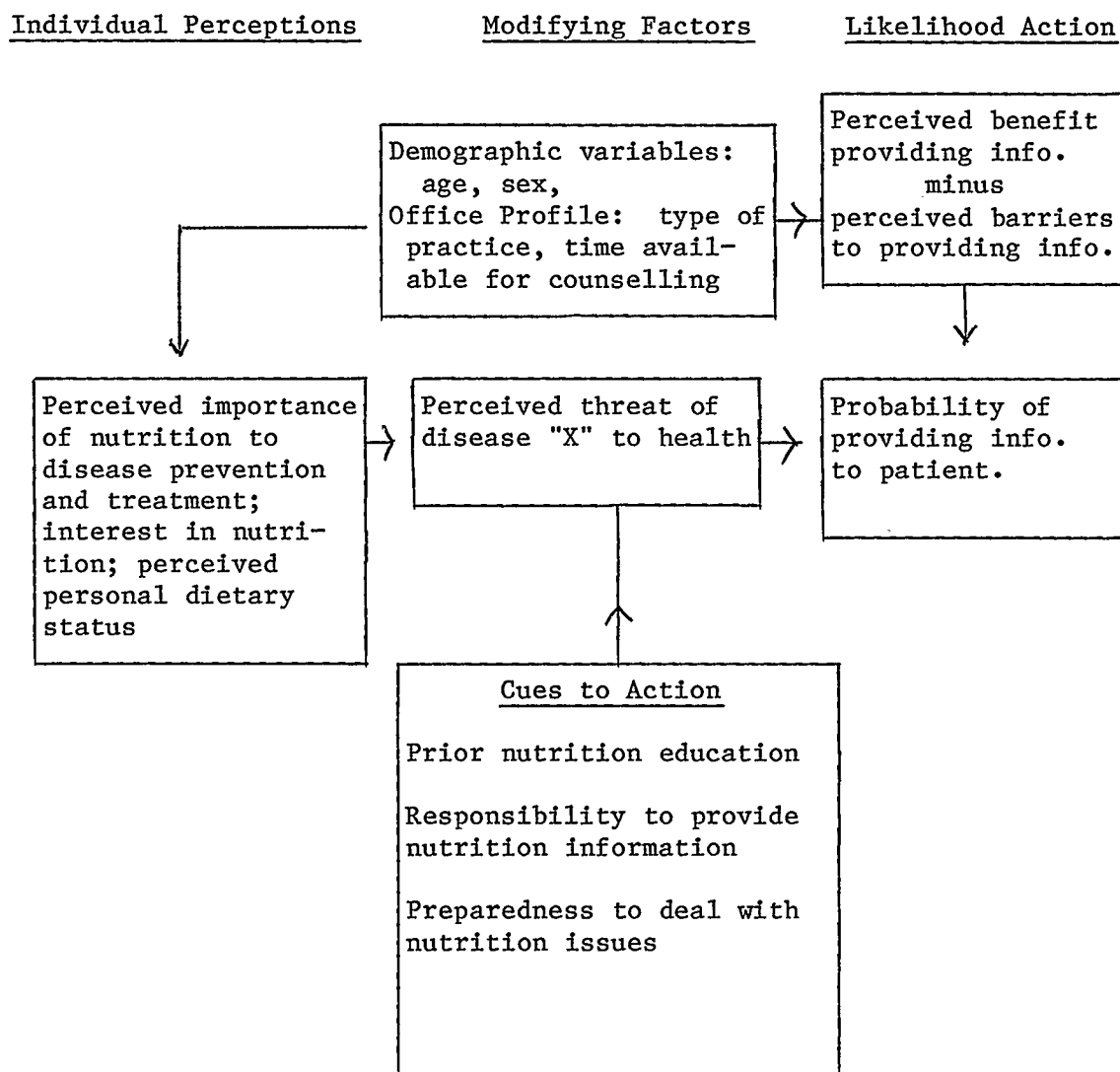
The health belief model



Source: Irwin Rosenstock, Historical origins of the health belief model. Health Education Monographs 2(4) (1974):334. Reprinted by permission of Charles B. Slac, Inc.

FIGURE 3:

Proposed Model Demonstrating Factors Influencing a Family Physician's Decision to Provide Nutritional Information to Patients.



CHAPTER IV

METHODS

Study Design

This study was primarily descriptive, focusing on describing, via self-report, the activities of Calgary family physicians in the provision of nutrition information to patients. An additional objective was to explore factors which may have influenced these activities, and as such, the results are likely to generate hypotheses for further investigations.

Development of Research Tools

The data in this study was collected via face-to-face interview questionnaire. Questions were designed to be answered via physician self-report. Among the several methods available to gather information regarding physician performance, self report via physician interview was chosen due to its relatively low cost, acceptability by physicians, and good content validity. Gerbert and Hargreaves⁽⁵⁸⁾ assessed the reliability and validity of information gathered via 4 methods (physician interview, patient interview, chart audit, videotaped observation) on physician behavior in the ambulatory care of chronic obstructive pulmonary disease (COPD) patients. Their results showed that no one method was best, but that content validity of the 2

interview methods was good. Self report has also been shown to yield valid results on patient reporting of physician utilization. Cleary and Jette⁽⁵⁹⁾ showed that the average difference between reported utilization and actual utilization was only 0.05 visits. The authors of both studies, however, are quick to point out that a reliable questionnaire with a well-trained interviewer is essential to ensure good results.

The questionnaire for this study was separated into two parts. A of the questionnaire, (Appendix A) the 'Physician Profile Sheet', included demographic questions (age, sex, office profile, medical school, membership in the Canadian College of Family Physicians (CCFP), etc.) as well as questions regarding physicians' perceptions of:

- . quality of nutrition teaching at the medical school they attended;
- . importance of nutrition to the prevention and treatment of disease;
- . personal interest in nutrition;
- . preparedness to deal with nutrition issues in their medical practice;
- . personal dietary habits;
- . personal weight status.

Part B of the questionnaire (Appendix B) consisted of 10 patient scenarios. Five of the scenarios were constructed as if a patient were asking the physician for nutrition information. The five topics in these scenarios included infant nutrition, vegetarianism, osteoporosis, cancer, and heart disease. With the exception of vegetarianism, the topics were chosen because they were either very common or contemporary issues which patients would be likely to ask their physicians about. Vegetarian was chosen since it was less common and contemporary. This diversity of topics should provide a wide range of responses.

The remaining five scenarios were constructed so that it appeared the physician had diagnosed a medical problem for which nutrition intervention was warranted. The medical conditions in these scenarios included adult-onset diabetes mellitus, hypercholesterolemia, constipation, lactose intolerance and obesity. In this case also, a diverse group of topics was chosen to maximize the range of responses.

For each of the 10 scenarios, physicians were asked to indicate what nutrition action they generally would take when faced with such a patient. The fixed responses, of which only one could be chosen, included:

1. provide counselling myself;
2. provide some counselling myself, and then refer somewhere else;
3. refer for additional information somewhere else; or
4. do not counsel, do not refer.

Depending on the response chosen, physicians were then asked to respond to additional questions, again with fixed responses, that focused on a) their definition of counselling, b) the reason(s) for their chosen action, c) referral source (if appropriate).

Pretest

Once designed, the questionnaire was pretested via face-to-face interview by the investigator on five practicing family physicians randomly selected from the 1986 College of Physicians and Surgeons of Alberta Registry to ascertain ease of questionnaire administration and prima facie validity of content information.

After the pretest, suggested revisions to the questionnaire included:

- a. grammatical corrections;
- b. the replacement of several open-ended questions with fixed response questions to facilitate analysis;
- c. suggestion by one physician to administer the questionnaire via mail. (This suggestion was rejected.)

General favorable comments regarding the questionnaire (both parts) included:

- a. the patient scenarios were unique and thought provoking and therefore easy to complete;
- b. the patient scenarios represented common questions and cases that a physician would regularly see;

c. the entire questionnaire was not time intensive and completion was relatively simple.

The recommended modifications were made and the questionnaire was ready for implementation. A script was designed by the investigator to accompany the questionnaire to ensure consistency in its administration.

Research Subjects

The target population was family physicians who were members of the College of Physicians and Surgeons of Alberta and who worked greater than 20 hours per week as family physicians in the city of Calgary.

Sampling Frame

The sampling frame was the August 1, 1986 College of Physicians and Surgeons of Alberta. Those physicians who were registered as non-specialists were considered as eligible subjects. (It was estimated by the Office of Medical Education at the University of Calgary that approximately 90% of those designated as non-specialists in the registry were in fact practicing family physicians.)

Determination of Sample Size

The estimated sample size required for this investigation is 80 family physicians, derived as follows:

Based on informal discussions with family physicians as well as previous work by others, the investigator estimated that 30% of the physicians would provide counselling themselves vs partial counselling then referral to another source, or direct referral to another source.

The maximum discrepancy desired between sample and population counselling practices is $\pm 10\%$ and the desired certainty that the discrepancy is within these limits is 95%. The 95% certainty and the " $\pm$ " for the desired discrepancy indicates 5% in two tails of the normal distribution, namely $Z = \pm 1.96$. The sample size is thus calculated as follows:

$$1.96 = \frac{10}{100 \sqrt{\pi(1 - \pi)/N}} \quad \pi = 0.3$$

Solving for N yields:

$$N = \frac{(196)^2}{10} \cdot 0.3(1 - 0.3) =$$

$$N = (382) (.21) = 81$$

Knowing now the required sample size, the method of administering the questionnaire then had to be considered.

Physicians' response rates to surveys vary depending on several factors. Cartright⁽⁵¹⁾ reported that key factors affecting response rates to surveys included their length, method of administration, and subject matter of the questionnaire. He noted that physicians response rates for interview surveys were greater (84%) than for mail questionnaires (77%), and that short questionnaires produced better response rates (96%) than long questionnaires (78%). Subject matter also greatly influenced response rates. As noted in previous sections of this text, response rates by physicians to nutrition related questionnaires have met with varying success, 17 - 50%.

By estimating a refusal rate of 50% and the likelihood that 10% of the physicians selection from the registry would be ineligible, it was decided to invite 180 physicians to participate in this study to achieve the desired 80 subjects.

Sample Selection

Systematic random sampling ($K = 6$) was used to select 180 names from the August 1, 1986 College of Physicians and Surgeons of Alberta. Of the 180 names selected, 4 were immediately eliminated as the investigator was aware that 2 were not practicing family physicians. One was used as a pretest subject, and one was a member of the investigator's supervisory committee. For the remaining 176, the

investigator went to the September 20, 1986 Calgary Yellow Page telephone directory phone book to secure telephone numbers (later to be called to confirm participation). Of the 176, phone numbers could not be obtained for 63. For these 63 physicians, the investigator first contacted personnel from Continuing Medical Education at the University of Calgary to ascertain their eligibility or whereabouts checking:

- . Physician Emergency Lists
- . Residency Lists
- . Discussion with Research Assistant, Continuing Medical Education (CME)

Of the 63, thirty-eight were eliminated due to:

- . 23 residents in specialty areas
- . 6 practicing solely in emergency medicine
- . 9 practicing in other than family medicine.

Of the remaining 25 names not located in the CME, the investigator then went to the residential telephone directory to attempt to locate the physicians. Of the 25, there were no listings for 17, and these were thus eliminated as potential subjects. There were listings for the remaining 8 physicians, all of which were contacted. Of these, 4 were ineligible and 4 were suitable invited participants. Thus after the first sampling, there were only 117 eligible participants. Recall that the CME estimated that about 10% of the physicians registered as non-specialists would be ineligible participants, (18 of the 180) whereas in fact 63 or 30% were ineligible. This prompted a second sampling to ensure an adequate sample size.

Systematic random sampling ($K = 3$) was again used (excluding those names previously chosen) to select an additional 90 possible subjects. Ninety were selected, as an additional 60 were needed to achieve a sample size of 180, and it was estimated this time that 30% may be ineligible. For the 90 names selected, the investigator again used the same procedure previously outlined to determine subject eligibility. Of the 90 names selected, there were no telephone listings in the yellow pages directory for 30 of the names. After contacting the OME regarding the whereabouts of these 30 names, a total of 16 were eliminated as:

- . 4 were residents
- . 4 were practicing emergency medicine
- . 8 were in practices other than family medicine.

After going to the residential directory for the remaining 14 names, 5 were not listed and therefore eliminated. Of the 9 remaining names, all were contacted, but none were eligible due to either a move from the province, retired from family practice, or not practicing in family medicine.

Thus, after the second sampling, 60 names were eligible. This added to the results of the first sampling brings the total of invited participants to 177.

Request for Participation

A letter of invitation was written by the investigator which included a description of the objective of the research study as well as a list of supervising personnel. The letter was sent to all 177 potential participants (Appendix C) One to two weeks after being sent, the investigator then telephoned the office of the potential participant to ascertain participation in the study. At the outset, the investigator sent out 60 letters which was later found to be excessive as the investigator was unable to contact all 60 in the two week time frame. On subsequent mailings, only 10 to 15 letters were sent at each mailing which was much more manageable.

Once contacted, the investigator first ascertained eligibility by asking the receptionist or nurse if the physician worked greater than 20 hours per week as a family physician. If the physician was not eligible, no further questions were asked. If eligible, the investigator then requested to speak to the physician to secure their response regarding participation. If the response was negative, then information was collected regarding the physician's:

- . type of practice
- . sex
- . medical school attended
- . year of graduation from medical school
- . year of birth
- . CCFP membership

If the physician refused to provide this information, no further questions were asked.

If the response to participation was positive, then an appointment was set at that time to administer the questionnaire. As physicians' offices were frequently very busy, the investigator set a limit of 3 contacts with the nurse or receptionist. If no response (i.e., no returned phone call) was obtained after 3 calls, then the physician was considered as a non-participant.

Questionnaire Administration

Prior to meeting the participant, the investigator routinely telephoned to confirm appointment time and date. Upon meeting with the physician, the investigator utilized the pre-designed script to administer the questionnaire.

Response Rate

Of the 177 physicians who were sent letters of invitation and were subsequently phoned to ascertain participation, only 158 were eligible participants. Nineteen were excluded because nine were not practicing family medicine, four had retired, four had relocated outside Calgary, one was on a maternity leave of absence and one was deceased. Of the 158 physicians eligible for participation in the study, 71 agreed to participate, yielding a total response rate of 45%. This response rate

compares favorably to other nutrition studies where response rates range from 17 - 50 percent.

Two additional points merit attention regarding the response rate of this study. Firstly, when the investigator had chosen this specific research topic and knew that physician participation was necessary, the investigator attempted to locally market the topic of nutrition to this target group prior to the research study. This was done by giving four presentations at medical rounds at varying hospitals. It is of interest to note that four of the participants in this study commented at the close of the interview that they had attended one of the aforementioned presentations. This serves to demonstrate the usefulness of getting to know your potential research subjects and may be of value to subsequent investigators.

Secondly, when physicians refused to participate in the study, the investigator recorded any spontaneous reasons offered for the refusal. As seen from Table 1, the primary reasons for not participating included: too many requests for participating in studies, too busy, or lack of interest. This may also be valuable information for subsequent investigators.

TABLE 1

Reasons Spontaneously Offered by
Non-respondents for not Participating

REASON	n = 87
None given	63
Too many requests for participation in studies	5
Too busy	5
Not interested	5
Happy with nutrition services in Calgary	2
Don't like to do surveys	2
Pass on this one	2
Leaving family medicine	1
Miscellaneous	2

CHAPTER V

RESULTS AND DISCUSSION

The results of this study will be presented as follows: Information obtained from the Physician's Profile Sheet including demographic data and physicians' individual perceptions will first be presented. A discussion of each finding will follow the presentation of the results. Secondly, physicians' responses to the patient scenarios will be presented. Here again, a discussion of pertinent findings will follow the presentation of the results. Primarily descriptive statistics will be used to present the data. The chi-square test was used to test for differences in observations. Since multiple chi-square tests were calculated, the accepted level of significance was increased to 0.01.

Respondent/Non-respondents/Sampling Frame:

Comparison of Selected Demographic Data

In an attempt to ascertain the representativeness of the sample to the population, selected demographic data of the respondents, non-respondents, and physicians in the sampling frame were compared. The demographic data compared included physician sex, Canadian College of Family Physician (CCFP) membership, year of graduation from medical school, and medical school attended. These characteristics were chosen since they were readily available from all three groups. Table 2

TABLE 2

Comparison of Demographic Characteristics of
Sample, Non-respondents, and Sampling Frame

Respondents (n = 71)		Eligible Non- respondents (n = 87)	Eligible Sampling Frame (n = 368)	
SEX	n %	n %	n %	
MALE	51 (71.8)	60 (69.0)	260 (70.6)	$\chi^2 = 0.16$ df = 2 N.S.
FEMALE	20 (28.2)	27 (31.0)	108 (29.4)	
CCFP MEMBERSHIP				
	n %			
YES	51 (71.8)	52 (59.8)	236 (64.1)	$\chi^2 = 2.54$ df = 2 N.S.
NO	20 (28.2)	35 (40.2)	132 (35.9)	
YEAR OF GRADUATION				
	n %			
<'49	3 (4.2)	2 (2.3)	17 (4.6)	$\chi^2 = 9.87$ df = 8 N.S.
50-59	11 (15.5)	25 (28.7)	64 (17.4)	
60-69	11 (15.5)	10 (11.5)	66 (17.9)	
70-79	33 (46.5)	30 (34.5)	143 (38.9)	
>'80	13 (18.3)	20 (23.0)	76 (20.7)	
MEDICAL SCHOOL				
	n %			
U of C	18 (25.4)	18 (20.7)	78 (21.2)	$\chi^2 = 2.38$ df = 6 N.S.
U of A	17 (23.9)	25 (28.7)	100 (27.2)	
Canada	18 (25.4)	16 (18.4)	81 (22.0)	
World	18 (25.4)	28 (32.2)	109 (29.6)	

demonstrates that the sample chosen is not significantly different from the population in the selected demographic characteristics. Like the sampling frame, the respondents are predominantly younger, male, CCFP members with Canadian medical education. That the sample is like the sampling frame on these characteristics does not necessarily guarantee that all results are representative of Calgary family physicians, but indeed it does help.

Demographic Data of Respondents: Sex, CCFP Membership,
Age, Year of Graduation from Medical School

As noted in Table 2, the participants in this study were predominately male (71.8%), members of the Canadian College of Family Physicians (71.8%), and graduated from medical school during or after 1970 (64.8%). The age distribution of the sample is depicted in Table 3. Most respondents (69%) were born during or after 1940. A correlation coefficient was calculated for the year of graduation and the year of birth which showed high positive correlation ($r = 0.94$) suggesting that physicians graduated from medical school at approximately the same age. Subtracting the mean year of birth (1943) from the mean year of graduation (1970) suggests the mean age at graduation was 27. This is reasonable considering that when medical students enter medical school after completing a Bachelor's degree (around age 22 or 23), then embark on a three or four year medical program, they finally graduate at age 26 or 27.

TABLE 3
Age Distribution of Study Participants

YEAR OF BIRTH	n = 71	%	CUMULATIVE %
<u>≤</u> 1919	2	2.8	
1920 - 1929	8	11.3	14.1
1930 - 1939	12	16.9	31.0
1940 - 1949	24	33.8	64.8
1950 - 1959	25	35.2	100
Mean Year of Graduation	1970		
Mean Year of Birth	1943		
Average age at Graduation	27		

Office Profile Information

Self reports by the respondents offered information on the type of medical practice, hours worked per week seeing patients in the office, average number of patients seen per hour, and physicians' perceptions of the adequacy of time available for counselling.

Table 4 reveals that most physicians worked in either solo (40.8%) or group (46.5%) practice. Most physicians (73.2%) saw patients in their office full time (greater than 24 hours per week) as shown in Table 5. Physicians most commonly saw four, five, or six patients per hour (Table 6) and most (64.8%) perceived the adequacy of time available for counselling as satisfactory or good (Table 7). We see in Tables 8, 9, and 10 that, for the characteristics of number of hours worked per week, number of patients seen per hour, and perceptions of the adequacy of time available for counselling, female physicians are slightly different from male physicians. Although none of the differences are significantly different at the $p < .01$ level, females were: less likely to work full time (60% versus 78.4% of male physicians); less likely to see greater numbers (seven to ten) of patients per hour (5% versus 11.8% of male physicians); and more likely to perceive the adequacy of time available for counselling as good or excellent (60% versus 27.4% of male physicians). Rowe et al⁽⁵²⁾ and Ogle et al⁽⁵³⁾ also reported that female physicians worked less hours per week and saw fewer patients per hour than female physicians. The gender differences in these characteristics may be partially explained by the suggestion that women may be involved in family related activities and thus work

less hours. Furthermore, they may spend more time with their patients than male physicians, and thus are less likely to see large numbers of patients per hour and more likely to perceive that they indeed have time for counselling. These suggestions are supported by the comments of Dr. Kari Smedstad, President of the Federation of Medical Women in Canada.⁽⁵⁴⁾ She remarks that, for many characteristics, female physicians practice differently from male physicians. She notes that they work fewer hours per week and spend more time with patients perhaps because women are less concerned with running the practice as a business and more concerned with gaining satisfaction from patient contact. She also commented that women do not consider medicine the be-all and end-all of their lives but rather are also very involved in family activities. Ellsbury et al⁽⁵⁷⁾ also recently reported on gender differences in practice characteristics of family physicians. The authors here noted that female physicians worked fewer hours per week and were more satisfied than males with their personal income. These gender differences in medical practice are indeed fascinating and with larger numbers of women entering medicine, it's likely that increased attention will be focused on sorting out the 'what's and why's of the practices of male and female physicians.

With respect to age, Tables 11, 12, and 13 show that, although the differences were not significantly different at the $p < .01$ level, younger physicians (born during or after 1950) were: less likely to work full time (64% versus 79.2% -born 1940-49; 77.3% - born during or before 1939); the least likely to see large numbers (seven to ten) of

patients per hour (8% versus 9.1% -born 1940-49, 13.6% - born during or before 1939); the most likely of all ages to see four, five, or six patients per hour; and the most likely to rate the adequacy of time available for counselling as satisfactory or good (84% versus 70.8% - born 1940-49; 36.4% - born during or before 1939). Younger physicians may work less hours because they may still be establishing their practices and not have a large patient load. On the other hand, they may be spending more of their time visiting patients in hospitals or attending medical rounds or conferences and thus not have long office hours. That younger physicians were the least likely to see larger number of patients per hour may be explained by the suggestion that older physicians, with their established practices either have a higher volume of patients to see, forcing them to see more per hour, or are more efficient in running an office practice that allows them to see more patients per hour.

On the issue of perceived adequacy of time available for counselling, more older than younger physicians perceive that time available for counselling was fair or poor. This indeed seems reasonable since, as previously noted, older physicians were the most likely to see larger numbers of patients per hour. With less time available per patients it makes sense that the perception holds that time available for counselling was poorer.

TABLE 4

Type of Practice

Type of Practice	n	%
Solo	29	40.8
Partnership	9	12.7
Group	33	46.5
Total	n = 71	100

TABLE 5

Hours Worked per Week
Seeing Patients in Office

Hours	n	%
≤ 24	19	26.8
≥ 25	52	73.2
Total	n = 71	100%

TABLE 6

Number of Patients Seen per Hour

Patients per Hour	n	%
can't estimate	2	2.8
0 - 3	6	8.5
4 - 6	56	78.9
7 - 10	7	9.9
Total	n = 71	100%

TABLE 7

Perceived Adequacy of Time Available to Physicians for Counselling

Rating	n	%
excellent	4	5.6
good	22	31.0
satisfactory	24	33.8
fair	17	23.9
poor	4	5.6
Total	n = 71	100%

TABLE 8

Weekly Work Patterns of Male and Female
Family Physicians (hours)

Hours Worked Per Week

	$\leq$ 24 hours per week	$\geq$ 25 hours per week	
Male	11 (21.6%)	40 (78.4%)	51
Female	8 (40%)	12 (60%)	20
	19 (26.8%)	52 (73.2%)	n = 71

$$\chi^2 = 2.49$$

$$df = 1$$

$$p < 0.20$$

TABLE 9

Patients seen per hour by Male and Female
Family Physicians

Patients Seen Per Hour

	1-3	4-6	7-10	
Male	4 (7.8%)	39 (76.5%)	6 (11.8%)	51
Female	2 (10%)	17 (85%)	1 (5%)	20
	6 (8.5%)	56 (78.8%)	7 (9.9%)	n = 71

$$\chi^2 = 0.84$$

$$df = 2$$

$$p < 0.95$$

TABLE 10

Perceived Adequacy of Time Available to
Male and Female Physicans for Counselling

Perceived Adequacy of Time

	EXCELLENT	GOOD	SATISFACTORY, FAIR, POOR	
Male	2 (3.9%)	12 (23.5%)	37 (72.6%)	51
Female	2 (10%)	10 (50%)	8 (40%)	20
	4 (5.6%)	22 (31.0%)	45 (63.4%)	n = 71

$$\begin{aligned} \chi^2 &= 6.59 \\ df &= 2 \\ p &< .05 \end{aligned}$$

TABLE 11

Hours Worked per Week by Physicians of Varying Ages

Year of Birth		≤ 24	≥ 25	
	≤ 1939	5 (22.7%)	17 (77.3%)	22
	1940-49	5 (20.8%)	19 (79.2%)	24
	1950-59	9 (36%)	16 (64%)	25
		19 (26.8%)	52 (73.2%)	n = 71

$$\begin{aligned} \chi^2 &= 1.70 \\ df &= 2 \\ p &< 0.50 \end{aligned}$$

TABLE 12

Patients Seen per Hour by Physician of Varying Ages

Year of Birth		1 - 3	4 - 6	7 - 10	
	≤ 1939	3 (13.6%)	16 (72.7%)	3 (13.6%)	22
	1940-49	3 (13.6%)	17 (77.3%)	2 (9.1%)	22
	1950-59	0 (0)	23 (92%)	2 (8%)	25
		6 (8.5%)	56 (78.9%)	7 (9.9%)	n = 69*

*2 excluded as
could not estimate
number of patients
seen per hour

$\chi^2 = 4.41$
df = 4
p < 0.50

TABLE 13

Perceived Adequacy of Time Available for Counselling
by Physicians of Varying Ages

Year of Birth				
	EXCELLENT	GOOD OR SATISFACTORY	FAIR OR POOR	
≤ 1939	3 (13.6%)	8 (36.4%)	11 (50%)	22
1940-49	1 (4.2%)	17 (70.8%)	6 (24.0%)	24
1950-59	0	21 (84%)	4 (16%)	25
	4 (5.6%)	46 (64.8%)	21 (29.6%)	n = 71

$$\chi^2 = 13.13$$

$$df = 4$$

$$p < 0.05$$

Educational Background

Self reports by the respondents offered information on their route of training to family medicine, medical school attended, perceptions of the quality of nutrition teaching at their medical school when they were students, where they learned most about nutrition, and how prepared they felt to deal with nutrition issues in their office. Information on these characteristics is represented in Tables 14 through 17. First, Table 14 shows that the route of training was divided fairly equally among the 3 categories of 1 year rotating internship, 2 year family medicine residency, and 'other' routes.

As noted from Table 1, the variety of medical schools attended by the respondents was similar to that of the sampling frame. Table 15 shows that most physicians (78.8%) perceived nutrition teaching as fair or poor at the time they were a student and only 5.6% rated it as good or excellent. Two physicians reported that they could not remember any nutrition teaching at all in their medical school. These results are not surprising considering previous reports by nutrition experts condemning the quality of nutrition teaching in medical schools.(2,55)

Both male and female physicians expressed similar views about the quality of nutrition teaching in medical schools, as shown in Table 16. Likewise, with respect to age, there were no significant differences as noted in Table 17. Of interest from this table, however, is the observation that no younger physicians (born between 1950-59) felt that

nutrition teaching was good or excellent. This suggests perhaps, that younger physicians' expectations of nutrition teaching may have been higher than those of older physicians perhaps arising from the increased recognition of the importance of nutrition in the medical arena. With greater expectations, younger physicians may have been more inclined to offer a lower rating to the quality of nutrition teaching.

A comparison of how physicians who graduated from different medical schools rated the quality of nutrition teaching in their respective medical schools indicates that Canadian graduates more often rated the quality of nutrition teaching as fair or poor (85.2% - Canadian graduates (excluding the University of Calgary); 88.9% - University of Calgary graduates; and 68.4% - graduates from non-Canadian medical schools (Table 18)). Non-Canadian graduates were more likely to rate the teaching as satisfactory or better (31.5%). This suggests perhaps that non-Canadian medical schools may have had superior nutrition curriculum. A closer examination of these results reveals that the majority of non-Canadian graduates in this study were from Europe, Great Britain, and Indo-China. Reports from Great Britain are similar to those in North America, condemning the quality of nutrition teaching in medical schools.⁽⁵⁵⁾ It is possible, however, that more high quality nutrition may be taught in Indo-chinese medical schools as malnutrition remains a major health problem in third world countries. While these points are noteworthy, the differences are, however, not statistically significant at the $p < .01$ level.

Consistent with these opinions of physicians that the quality of nutrition teaching in medical schools is fair or poor, is the finding that medical school is rarely regarded by physicians as a place where they learned most of their nutritional knowledge. Table 19 depicts the results from the question asking physicians to select one or more places from which they learned most about nutrition. For those who just chose one location ($n = 44$), only 6 (13.6%) chose medical school as the place they learned most about nutrition. Eighty percent of those who chose only one location indicated that most of their nutritional knowledge was acquired via self study. When considering all physicians responses, including those with multiple responses, here again medical school was mentioned at all only infrequently, 16 (19.3%) and self study mentioned very frequently (67.5%). Two explanations are offered for these results. Firstly, the science and art of nutrition has changed considerably over the last few decades thus necessitating self-study to keep abreast of current theories and controversies. Secondly, nutrition is a very practical science and physicians may not have had sufficient opportunity to apply nutrition knowledge while in medical school. Once in practice, however, they may have become attuned to their patients' needs, realized their strengths and weaknesses and may have then sought continuing education through self-study.

The final educational question asked concerned physicians' perceived preparedness to deal with nutrition issues in their practice. In response to this question, Table 20 illustrates that

36.6% of physicians felt quite or very prepared to deal with nutrition issues and only 16.9% felt quite unprepared, with no respondents in the very unprepared category. The majority of physicians, however, (46.5%) did not feel sufficiently certain to indicate their preparedness to deal with nutrition issues. This may suggest that they have encountered nutrition issues too infrequently to have a true feeling about their preparedness, or that they doubt their preparedness sufficiently so as to be unable to indicate favourable or unfavourable preparedness. When comparing these results to those obtained from the Ontario Nutrition Information Needs Assessment study,⁽¹⁸⁾ we find that here also, only 34% of family physicians agreed or strongly agreed with the statement that their professional training in nutrition was adequate. In contrast, however, only 14% of the respondents were undecided and the remaining 52% disagreed or strongly disagreed with the statement. This suggests, perhaps, that of the 46.5% of physicians who felt undecided in the present study, a majority may actually have felt more unprepared than prepared.

When comparing the responses of males and females, the results are not statistically different at the $p < .01$ level. There are however, noteworthy observations. Table 21 illustrates that females were more decisive in their responses with only 30% indicating that they were neither prepared nor unprepared vs 52.9% of males expressing this view. Females felt both more prepared (45%) and unprepared (25%) than their male counterparts (33.3% and 13.7% respectively) suggesting, perhaps, that they are more decisive in their feelings. It is difficult to say, however, whether female physicians really do feel

more and less prepared than males, or if they are just more certain of their feelings.

With respect to age, there were no differences in physicians perceived preparedness to deal with nutrition issues, as shown in Table 22. With respect to physicians who graduated from different medical schools and their perceptions of their preparedness to deal with nutrition issues, there were no differences as shown in Table 23.

Physicians' Individual Perceptions

Self reports by the respondents offered information on physicians perceived importance of nutrition to preventing and treating disease, personal interest in the topic of nutrition, and personal assessment of dietary habits and weight status. While there are noteworthy observations, there were no statistically significant differences at the $p < .01$ level, for physicians of varying age, sex, or place of medical school training with respect to the previously mentioned individual perceptions. Tables 24 and 25 show that, on the issues of the importance of nutrition to disease prevention and treatment, most physicians perceived nutrition to be moderately to very important, 94.4% and 85.0% respectively. This is not unexpected considering the recent high profile nutrition in general has attained in the medical arena. These findings are also consistent with those of Wechester et al(37), Sobal et al(38), and Hyatt(31) who reported that family

TABLE 14

Route of Training to Family Medicine of Respondents

Route	n	%
1 Year Rotating Internship and 1 Year Additional Training	19	26.8
2 Year Family Medicine Residency	26	36.6
'Other' Routes	26	36.6
Total	n = 71	100%

TABLE 15

Physicians' Perceptions of the Quality of
Nutrition Teaching at Their Medical School
When They Were Students

Rating	n	%
Excellent	2	2.8
Good	2	2.8
Satisfactory	9	12.7
Fair	28	39.4
Poor	28	39.4
Can't remember	2	2.8
Total	n = 71	100%

TABLE 16

Perceptions of the Quality of Nutrition
Teaching in Medical Schools of Male
and Female Family Physicians

	EXCELLENT TO GOOD	SATISFACTORY	FAIR TO POOR	CAN'T REMEMBER	
Male	3 (5.9%)	6 (11.8%)	40 (78.4%)	2 (3.9%)	51
Female	1 (5%)	3 (15%)	16 (80%)	0	20
	(5.6%)	(12.7%)	(78.9%)	(2.8%)	n = 71

$\chi^2 = 0.12$
 $df = 2$
 $p < 0.95$

TABLE 17

Perceptions of the Quality of Nutrition
Teaching in Medical Schools by
Physicians of Varying Ages

YEAR OF BIRTH		EXCELLENT TO GOOD	SATISFACTORY	FAIR TO POOR	CAN'T REMEMBER	
	< 1939	2 (9.1%)	2 (9.1%)	16 (72.7%)	2 (9.1%)	22
	1940-49	2 (8.3%)	3 (12.5%)	19 (79.2%)	0	24
	1950-59	0	4 (16%)	21 (84%)	0	25
		(5.6%)	(12.7%)	(78.9%)	(2.8%)	n = 71

$$*X^2 = 2.68$$

$$df = 4$$

$$p < 0.95$$

* excludes
can't remember

TABLE 18

Perceptions of the Quality of Nutrition
Teaching in Medical Schools of Physicians
who Graduated From Different Medical Schools

	EXCELLENT OR GOOD	SATISFACTORY	FAIR OR POOR	
CANADA EXCLUDING U of C	2 (5.9%)	3 (8.9%)	27 (85.2%)	32
U of C	0	2 (11.1%)	16 (88.9%)	18
FOREIGN	2 (10.5%)	4 (21%)	13 (68.4%)	19
	4 (5.8%)	9 (13%)	56 (78.9%)	n = 69*

$$\begin{aligned} \chi^2 &= 3.66 \\ df &= 4 \\ p &< 0.50 \end{aligned}$$

*could not remember
if any nutrition was
taught

TABLE 19

Where Physicians Learned Most About Nutrition

	n	%
Medical School	6	13.5
Internship	1	2.3
Residency	2	4.6
Self-Study	35	79.6
Total	n = 44	100%

* N $\neq$ 71 since 27 chose more than 1 of the above.

	n	%
Medical School mentioned	16	19.3
Internship mentioned	4	4.8
Residency mentioned	7	8.4
Self-Study mentioned	56	67.5
Total	n = 83	100%

TABLE 20

Physicians' Perceptions of Their
Preparedness to Deal with
Nutrition Issues

Rating	n	%
Very Prepared	2	2.8
Quite Prepared	24	33.8
Neither Prepared nor Unprepared	33	46.5
Quite Unprepared	12	16.9
Very Unprepared	0	0
	n = 71	100%

TABLE 21

Perceptions by Male and Female Physicians of their
Preparedness to Deal with Nutrition Issues

	Very or Quite Prepared	Neither Prepared nor Unprepared	Quite Unprepared	
Male	17 (33.3%)	27 (52.9%)	7 (13.7%)	51
Female	9 (45%)	6 (30%)	5 (25%)	20
	26 (36.6%)	33 (46.5%)	12 (16.9%)	n = 71

$\chi^2 = 6.50$
 $df = 2$
 $p < 0.05$

TABLE 22

Perceptions by Physicians of Varying Ages of Their
Preparedness to Deal with Nutrition Issues

YEAR OF BIRTH		Moderately or Very Prepared	Neither Prepared nor Unprepared	Moderately or Very Unprepared	
	≤ 1939	9 (40.9%)	10 (45.5%)	3 (13.6)%	22
	1940-49	7 (29.2%)	13 (54.2%)	4 (16.7%)	24
	1950-59	10 (40%)	10 (40%)	5 (20%)	25
		26 (36.6%)	33 (46.5%)	12 (16.9%)	n = 71

$$\begin{aligned} \chi^2 &= 1.37 \\ df &= 4 \\ p &< 0.95 \end{aligned}$$

TABLE 23

Perceptions by Physicians who Graduated from Different
Medical Schools of their Preparedness to Deal with
Nutrition Issues

	Very or Quite Prepared	Neither Prepared nor Unprepared	Very or Quite Unprepared	
CANADA EXCLUDING U of C	12 (37.5%)	18 (56.3%)	4 (12.5%)	34
U of C	6 (33.3%)	8 (44.4%)	4 (22.2%)	18
FOREIGN	8 (42.1%)	7 (36.8%)	4 (21.1%)	19
	26 (36.6%)	33 (46.5%)	12 (16.9%)	n = 71

$$\chi^2 = 1.95$$

$$df = 4$$

$$p < 0.95$$

physicians felt strongly that good nutrition is a key component of maintaining health.

Males and females expressed somewhat different opinions on these two issues, as depicted in Tables 26 and 27. Virtually 100% of female physicians viewed nutrition as moderately to very important to both disease prevention and treatment. This is in contrast to the response of their male counterparts who expressed these opinions 92.2% and 80.4% of the time, respectively. These differences may exist for the following reasons. Firstly, the females of the sample on the whole were younger than the males (55% of the females were born after 1950, compared to 27% of males) and thus, perhaps more aware of the importance of recent nutrition theories to health maintenance. Secondly, as women, they may be faced with more decisions regarding family nutrition and again, more aware of the issues.

With respect to age, Table 28 illustrates that younger physicians more often expressed the opinion that nutrition is moderately to very important to disease prevention than older physicians. Here again, the newness of nutrition as a medical school topic of instruction may account for these differences. With respect to medical school attended, Tables 30, and 31 illustrate that graduates from varying medical schools expressed similar strong feelings about the importance of nutrition to disease prevention and treatment.

On the issue of physician interest in nutrition, Table 32 reveals that most physicians (74.6%) expressed that they were moderately to

very interested in the topic of nutrition. Here again, considering the high profile that nutrition has obtained in the medical arena with numerous reports involving dietary factors and health maintenance, it seems reasonable that physicians expressed high interest in such a contemporary issue. It was also expected that the participants would express high interest since it is known that one of the factors influencing physicians response rates to surveys is the topic; hence, it was likely that most respondents were in fact interested in the topic prior to agreeing to participate.

Males and females expressed somewhat different personal interest in the topic of nutrition. Table 33 reveals that 85% of female physicians expressed that they were moderately to very interested in the topic of nutrition versus only 70.6% of male physicians. Here again, more female physicians may have been interested because of their personal use of dietary principles in planning family nutrition. Table 34 reveals that overall high interest in the topic of nutrition was consistent among all age groups. Interest in nutrition was likewise consistent among graduates from varying medical schools as shown in Table 35.

Most physicians also perceived themselves as having generally good dietary habits and being at or near their ideal weight. Table 36 shows that 60.6% perceived themselves as having good to very good dietary habits and Table 37 shows that 60.6% believed they were very near their ideal weight. This is not surprising for the following reason.

Physicians have been shown to have overall lower mortality than all other economically active men.⁽⁵⁶⁾ Knowing that weight, specifically overweight is a risk factor for heart disease, the leading cause of death in North America, physicians may have heeded this message and placed themselves in the normal weight category. Validation of these self reports via weight measurement, however, would be ideal to confirm this suggestion.

As shown in Table 38, female physicians more often felt close to their ideal weight (70.0%) than males (56.9%), who were more likely to classify themselves as overweight (39.2%). Likewise, as shown in Table 39, more female physicians felt that their dietary habits were good or very good (75%) than male physicians (54.9%). This is not unexpected since the females on the whole were a younger group and both dietary habits and problems with overweight worsen with increasing age.

With respect to age, Tables 40 and 41 show that younger physicians were more likely to classify themselves as having good or very good dietary habits and that with increasing age, physicians were more likely to classify themselves as overweight. This indeed seems reasonable since weight problems are increasingly prevalent with increasing age.

Physicians were also asked to indicate what nutrition topics, if any, they wanted to learn more about. Table 42 shows that the topic most often mentioned dealt with the relationship of dietary lipids in the prevention and treatment of heart disease. This was not unexpected

since the topic is indeed both contemporary and controversial. The next most commonly mentioned topics were related to the issues of weight control, diabetic diets, and pediatric nutrition, all problems physicians commonly face in their offices. With respect to weight control and diabetic diets, it's likely that physicians are in search of how to help patients succeed on these diets. On the issue of pediatric nutrition, it's possible that physicians are faced with many questions from mothers regarding childhood feeding problems (e.g., food intolerances, allergies, etc.) and hence seeking clarifying information. This information will be useful in planning continuing education programs for Calgary physicians.

TABLE 24

Physicians' Perceptions of the
Importance of Nutrition to Preventing Disease

Rating	n	%
Very Important	46	64.8
Moderately Important	21	29.6
Somewhat Important	4	5.6
Moderately Unimportant	0	0
Very Unimportant	0	0
Total	n = 71	100%

TABLE 25

Physicians' Perceptions of the
Importance of Nutrition to Treating Disease

Rating	n	%
Very Important	30	42.3
Moderately Important	31	43.7
Somewhat Important	9	12.7
Moderately Unimportant	1	1.4
Very Unimportant	0	0
Total	n = 71	100%

TABLE 26

Male and Female Physicians' Perceptions of the
Importance of Nutrition to Preventing Disease

	Very or Moderately Important	Somewhat Important, Moderately or Very Unimportant	
Male	47 (92.2%)	4 (7.8%)	51
Female	20 (100%)	0 (0)	20
	67 (94.4%)	4 (5.6%)	n = 71

$$\chi^2 = 1.66$$

$$df = 1$$

$$p < 0.20$$

TABLE 27

Male and Female Physicians' Perceptions of the
Importance of Nutrition to Disease Treatment

	Very or Moderately Important	Somewhat Important, Moderately or Very Unimportant	
Male	41 (80.4%)	10 (19.6%)	51
Female	20 (100%)	0 (0)	20
	61 (85.9%)	10 (14.1%)	n = 71

$\chi^2 = 4.56$
 $df = 1$
 $p < 0.05$

TABLE 28

Perceptions of the Importance of Nutrition to
Disease Prevention by Physicians of
Varying Ages

YEAR OF BIRTH		Moderately to Very Important	Somewhat Important	Moderately to Very Unimportant	
	≤ 1939	20 (91.9%)	2 (8.1%)	0	22
	1940-49	22 (91.6%)	2 (8.4%)	0	24
	1950-59	25 (100%)	0	0	25
		67 (94.4%)	4 (5.6%)	0	n = 71

$$\chi^2 = 2.32$$

$$df = 2$$

$$p < 0.50$$

*excludes category of
'moderately to very
unimportant'

TABLE 29

Perception of the Importance of Nutrition in the
Treatment of Disease by Physicians
of Varying Ages

YEAR OF BIRTH		Moderately or Very Important	Somewhat Important	Moderately or Very Unimportant	
	≤ 1939	18 (81.8%)	4 (19.2%)	0	22
	1940-49	20 (83.3%)	3 (12.5%)	1 (4.2%)	24
	1950-59	23 (92%)	2 (8%)	0	25
		61 (85.9%)	9 (12.7%)	1 (1.4%)	n = 71

$$\begin{aligned} \chi^2 &= 1.08 \\ df &= 2 \\ p &< 0.95 \end{aligned}$$

*excludes category of
'moderately or very
unimportant'

TABLE 30

Perceptions of the Importance of Nutrition to
Disease Prevention of Physicians who
Graduated from Different Medical Schools

	Moderately or Very Important	Somewhat Important	
CANADA EXCLUDING U of C	33 (97.1%)	1 (2.9%)	34
UNIVERSITY OF CALGARY	17 (94.4%)	1 (5.6%)	18
FOREIGN	17 (89.5%)	2 (10.5%)	19
	67 (94.4%)	4 (5.6%)	n = 71

$\chi^2 = 1.32$
df = 2
p < 0.95

TABLE 31

Perceptions of the Importance of Nutrition in
the Treatment of Disease by Physicians who
Graduated from Different Medical Schools

	Moderately or Very Important	Somewhat Important	Moderately or Very Unimportant	
CANADA EXCLUDING U OF C	30 (88.2%)	3 (8.8%)	1 (2.9%)	34
UNIVERSITY OF CALGARY	16 (88.9%)	2 (11.1%)	0	18
FOREIGN	15 (78.9%)	4 (21.1%)	0	19
	61 (85.9%)	9 (12.7%)	1 (1.4%)	n = 71

* $\chi^2 = 1.61$
df = 2
p < 0.50

*excludes category of
'moderately or very unimportant'

TABLE 32

Physician Interest in Nutrition

	n	%
Very Interested	15	21.1
Moderately Interested	38	53.5
Somewhat Interested	15	21.1
Moderately Uninterested	2	2.8
Very Uninterested	1	1.4
Total	n = 71	100%

TABLE 33

Male and Female Reports of Personal Interest in Nutrition

	Moderately or Very Interested	Somewhat Interested/ Moderately Uninterested/ Very Uninterested	
Male	36 (70.6%)	15 (29.4%)	51
Female	17 (85.0%)	3 (15.0%)	20
	53 (74.6%)	18 (25.4%)	n = 71

$\chi^2 = 1.58$
 df = 1
 p < 0.50

TABLE 34

Self-reported Interest in Nutrition by Physicians of Varying Ages

YEAR OF BIRTH		Moderately or Very Interested	Somewhat Important	Moderately or Very Uninterested	
	≤ 1939	17 (77%)	4 (18.2%)	1 (4.5%)	22
	1940 - 49	17 (70.8%)	6 (25%)	1 (5%)	24
	1950 - 59	19 (76%)	5 (20%)	1 (4%)	25
		53 (74.6%)	15 (21.1%)	3 (4.2%)	n = 71

$$\begin{aligned} *X^2 &= 0.35 \\ df &= 2 \\ p &< 0.95 \end{aligned}$$

*excludes category of
'moderately or very uninterested'

TABLE 35

Self-reported Interest in Nutrition by Physicians who
Graduated from Different Medical Schools

	Moderately or Very Interested	Somewhat Important	Moderately or Very Uninterested	
CANADA EXCLUDING U of C	25 (73.5%)	7 (20.6%)	2 (5.9%)	34
UNIVERSITY OF CALGARY	14 (77.8%)	4 (22.2%)	0	18
FOREIGN	14 (73.7%)	4 (21.1%)	1 (5.3%)	19
	53 (74.6%)	15 (21.1%)	3 (4.2%)	n = 71

$$\chi^2 = 0$$

TABLE 36

Perceived Personal Overall Dietary Habits by Physicians

	n	%
Very Good	10	14.1
Good	33	46.5
Satisfactory	24	33.8
Fair	3	4.2
Poor	1	1.4
Total	n = 71	100%

TABLE 37

Physicians' Perceptions of Their Weight Status

	n	%
21-50% above ideal weight	2	2.8
6-20% above ideal weight	23	32.4
$\pm$ 5% ideal weight	43	60.6
6-20% below ideal weight	2	2.8
21-50% below ideal weight	1	1.4
Total	n = 71	100%

TABLE 38

Male and Female Physicians' Perceptions of their
Proximity to Ideal Weight

Proximity to Ideal Weight (W)
(in percentage)

	(+20 - +50)	(+6 - +20)	(+5)	(-6 - -50)	
Male	2 (3.9%)	18 (35.3%)	29 (56.9%)	2 (3.9%)	51
Female	0	5 (25%)	14 (70%)	1 (5%)	20
	n = 2 (2.8%)	23 (32.4%)	43 (60.6%)	3 (4.2%)	n = 71

$$*X^2 = 0.86$$

$$df = 1$$

* excludes categories of
(+20 - +50 and -6 - -50)

TABLE 39

Male and Female Physicians' Perceptions of their
Personal Dietary Habits

	Very Good or Good	Satisfactory	Fair or Poor	
Male	28 (54.9%)	20 (39.2%)	3 (5.9%)	51
Female	15 (75%)	4 (20%)	1 (5%)	20
	43 (60.6%)	24 (33.8%)	4 (5.6%)	n = 71

$$*X^2 = 2.52$$

$$df = 1$$

$$p < 0.20$$

*excludes category of
'fair or poor'

TABLE 40

Perceptions of Personal Overall Dietary Habits by
Physicians of Varying Ages

YEAR OF BIRTH		Very Good or Good	Satisfactory	Fair or Poor	
	<u>< 1939</u>	13 (59%)	8 (36.4%)	1 (4.5%)	22
	1940-49	13 (54.2%)	9 (37.5%)	2 (8.3%)	24
	1950-59	17 (68%)	7 (28%)	1 (4%)	25
		43 (60.6%)	24 (33.8%)	4 (5.6%)	n = 71

$$*X^2 = 0.76$$

$$df = 2$$

$$p < 0.95$$

*excludes category of
'fair or poor'

TABLE 41

Perceptions of Proximity to Ideal Weight by
Physicians with Varying Ages

Proximity to Ideal Weight (W)
in percentage

YEAR OF BIRTH		+6 - +50	<u>+5</u>	-6 - 50	
	<1939	12 (55%)	8 (36%)	2 (9%)	22
	1940-49	8 (33.3%)	16 (66.7%)	0	24
	1950-59	5 (20%)	19 (76%)	1 (4%)	25
		25 (35.2%)	43 (60.6%)	3 (4.2%)	n = 71

$$\chi^2 = 7.39$$

$$df = 2$$

$$p < 0.05$$

*excludes category
of (-6 - -50)

TABLE 42

Topics on Which Physicians Requested More Information

TOPICS	NUMBER OF RESPONSES
No Response	26
Lipids/Heart Disease	21
Weight Control	11
Diabetic Diets	8
Nutrition/Pediatrics	8
Diet and Cancer Prevention	5
How to Deal with Nutrition Fads	4
Requirements in Disease	4
Geriatric Nutrition	4
Trace Elements in Foods	4
Vitamin Abuse	3
Osteoporosis	3
Nutrition and Disease Prevention	3

Physicians' Responses to Patient Scenarios

The nutrition counselling activities that physicians reported to initiate for all 10 scenarios are listed in Table 43. The results show that for the 710 counselling opportunities (10 scenarios for each of 71 physicians), physicians responded that they most often provided counselling themselves (60%), and furthermore that some counselling by the physician was involved for 93% of the opportunities (60% counsel only; 33% provide some counselling, then refer elsewhere). Given the opportunity, physicians 'only referred' 5% of the time, and some referring was involved 38% of the time. The respondents in this study reported to counselling by themselves slightly more often than reported in previous studies. Modrow et al⁽⁴⁶⁾ reported in depth counselling by physicians occurred less than 50% of the time. Wells et al⁽⁴⁷⁾ reported that family physicians provided weight counselling oriented to primary and tertiary prevention 55% of the time. Oradovec et al⁽⁴⁴⁾ reported that when a patient's weight or diet was identified as a risk factor for cardiovascular disease, there was evidence of attempts by family physicians to modify the risk factor 45% of the time. Kottle et al⁽³⁹⁾ reported that about half of the responding physicians gave dietary advice for the prevention of cardiovascular disease to fewer than 20% of their patients. For each of these studies, the respective authors offered reasons for physicians low counselling habits, some of which included the perception by the physician that the patient would not adhere to the advice, poor confidence by the physician in his or her ability to effect a behavior change, and lack of time. The writer offers the following suggestions as to why the respondents in this

study reported to counselling at a higher rate. Firstly, all previously quoted studies are from the United States, and perhaps some of the differences may be attributed to differences in the U. S. and Canadian health care systems. Access to dietitians by physicians and patients in the U. S. is likely greater since many states now offer insurance coverage for dietary counselling by dietitians in private practice. This is not the case in Calgary, the area in which the respondents practice. With greater access to dietitians, U. S. physicians may have been more inclined to advise patients to seek counselling on their own. Secondly, since the most recent study reviewed was published in 1985, it is feasible that physician attitudes have changed with the continued high profile of nutrition issues in the medical arena. As such, perhaps with greater interest and increased belief in the importance of nutrition to health maintenance, physicians are now more inclined to provide nutrition counselling. It is also possible that the physician perceived this action as the desirable action by the respondent, but this is impossible to determine.

The previously mentioned results indicate the percentage of time a counselling activity occurs given an opportunity; they do not represent, however, if an individual physician is consistent in his or her nutrition counselling behaviors. In an effort to determine if there is inter-physician consistency in counselling behaviours, counselling scores were assigned to each physician in the following manner. Scores were assigned according to how many times the physician responded that he counselled for the 10 scenarios. For example, if a physician 'counselled himself' only once then he scored '1'; in

TABLE 43

Physician Responses to Patient Scenarios

Activity	n	%
Counsel	429	60
Counsel, then refer	236	33
Refer	38	5
Other	7	1
Total	n = 710	100%

TABLE 44

Counselling Score of Physicians

Counselling Score	Frequency	%
1	0	0
2	0	0
3	6	8.5
4	5	7.0
5	13	18.3
6	17	23.9
7	18	25.4
8	9	12.7
9	2	2.8
10	1	1.4
Total	n = 71	100%

contrast if the physician counselled 7 of 10 times, then he scored '7'. Table 44 represents the compiled counselling scores of all the physicians. The most common counselling scores were five, six, and seven (67.4% of physicians) suggesting that counselling is indeed the most common practice among the majority of physicians. It is thus equivalent to say that most physicians counsel themselves as well as that given the opportunity for some type of nutrition counselling, counselling by physicians themselves occurs most often.

Physicians' Responses to Patient vs Physician-Initiated Scenarios

While it is evident that physicians reported that they most often provided nutrition counselling themselves for the 10 scenarios, their activities differed significantly ($\chi^2 = 83.13$, $df = 1$, $p < .001$) with the type of scenario encountered. Table 45 depicts physicians' nutrition counselling behaviors for patient - initiated and physician - initiated scenarios. We see here that when the patient was asking the physician for nutrition information, most often the activity was to provide the information himself or herself (76%). In contrast, when faced with a situation that the physician determined warranted nutrition intervention, they less often counselled themselves (44.5%). Rather, physicians were more likely to refer to another source, either after providing some counselling themselves (47.0%) or simply referring (8.5%). For both types of scenarios, however, we see that there was still a strong inclination to provide at least some counselling (85.7%, patient initiated; 92.5%, physician initiated), but for the latter, the physician more frequently requested additional counselling from another

TABLE 45
Physician Responses to Patient Scenarios

Activity	Patient Initiated		Physician Initiated	
	n	%	n	%
Counsel	271	76.3	158	44.5
Counsel, then refer	69	19.4	107	47.0
Refer	8	2.3	30	8.5
Other	7	2.0	0	0

$$*X^2 = 83.13$$

$$df = 2$$

$$P < .001$$

* excludes 'other' category

resource. These results may be explained as follows. For the patient-initiated scenarios, it seems very reasonable that a physician would have himself provided information to patients when asked since he may well have believed it was his responsibility to do so to foster the patient-physician relationship. It appeared, however, that if the physician was asked a more detailed and less common nutrition question by a patient e.g. (how to safely start a strict vegetarian diet), he was less likely to counsel himself solely and more likely to provide only some information and then refer the patient elsewhere. This result is not unexpected since this question was likely less common than the other patient-initiated questions and hence one for which the physician may have needed assistance with his reply.

For the physician-initiated scenarios, it is possible that physicians were less likely to have provided the information solely by himself or herself since, for most scenarios, there was rather extensive and detailed nutrition counselling involved for which the physician may not have had the time, or confidence, or felt that it was his responsibility. The exception in this group of scenarios is that of functional constipation where virtually 100% of the physicians responded that they provided the nutrition information by themselves. This is not surprising, however, since functional constipation is indeed a very common problem and one for which the dietary treatment is relatively simple and straightforward.

Physicians' Perceptions of Nutrition 'Counselling'

When physicians were either providing counselling themselves or providing some counselling and then referring elsewhere for additional information, it was of interest to know what activities physicians considered as 'counselling' or 'some counselling'. Each time physicians responded in either of these categories, they were asked to indicate what activities they considered as 'counselling'. The fixed responses included: talking with the patient, providing written information, doing both of these activities, or some 'other' activity(ies). Table 46 shows that doing both, providing written information and talking to the patient, was the most common response for both counselling (52.2%) and counselling, then referring (53.8%) activities. The table also shows that just talking with the patient was the next most common response for both activities, although this was more common for those who just counselled (43.3%), than for those who counselled, then referred (38.1%). This seems reasonable for two reasons. Firstly, if a physician was counselling by himself or herself, it is possible that they felt quite comfortable to just talk about it without supporting literature. Secondly, those who did some counselling, then referred, may have been less likely to give written information since they may have expected that the person to whom they referred the patient would be dispensing relevant literature to accompany the counselling.

Physicians' perceptions on the activities considered as 'counselling' and 'some counselling' differed according to the type of

scenario. Tables 47 and 48 reveals that for patient-initiated scenarios, talking with the patient was the most common activity considered as 'counselling' and 'some counselling'. In contrast, for physician-initiated scenarios, the most common activity considered as 'counselling' and 'some counselling' was doing both, talking to the patient and providing written information. These results are reasonable since the physician-initiated scenarios required more teaching and more supporting literature than the patient-initiated scenarios, where general discussion with the patient may have been more likely to suffice.

Physicians' Reasons for Participating in Varying Nutrition Counselling Activities

Physicians participated in varying nutrition counselling activities for different reasons. In this study, the respondents were first asked to indicate which of a preset group of reasons was the primary factor in their decision as to which type of counselling they initiated. They were secondly asked if there were any additional reasons for their actions. Table 49 shows that when all actions are grouped together, the most common primary reason for action involved the issues of: physician responsibility to take the action, physician competence to deal with the nutrition question, and physicians perceived importance of the problem to the patient's health.

To look at this issue a little more closely, Table 50 reveals that the primary reasons for action differed according to the type of activity performed. For physicians who provided counselling

TABLE 46

Activities Physicians Consider as "Counselling" and
"Some Counselling"

	"Counselling" Counsel	"Some Counselling" Counsel then Refer	n
Talk with Patient	190 (44.3%)	90 (38.1%)	280
Provide Written Information	11 (2.6%)	12 (5.9%)	23
Talk with patient and provide written information	224 (52.2%)	127 (53.8%)	351
Other	4 (1.0%)	7 (3.0%)	11
	429	236	n = 665

$\chi^2 = 8.05$
df = 3
p < .05

TABLE 47

Comparison of Activities Considered as "Counselling" when
Counselling on Patient-Initiated vs Physician-Initiated Scenarios

	Patient Initiated	Physician Initiated	n
Talk with Patient	142 (52.4%)	48 (30.4%)	190
Provide Written Information	6 (2.2%)	5 (3.2%)	11
Talk with patient and provide written information	120 (44.3%)	104 (65.8%)	224
Other	3 (1.1%)	1 (0.1%)	4
	241	158	n = 429

$$*X^2 = 20.12$$

$$df = 2$$

$$P < .001$$

*excludes 'other' category

TABLE 48

Comparison of Activities Considered as "Some Counselling" when
Counselling, then Refer on Patient-Initiated vs
Physician-Initiated Scenarios

	Patient Initiated	Physician Initiated	n
Talk with Patient	33 (47.8%)	57 (34.1%)	90
Provide Written Information	7 (10.1%)	5 (3.0%)	12
Talk with patient and provide written information	24 (34.8%)	103 (61.7%)	127
Other	5 (7.2%)	2 (1.2%)	7
	n = 69	n = 167	n = 236

* $\chi^2 = 14.07$
df = 2
p < .001

* 'other' omitted
in calculation

themselves, the primary reason for action given was that the physician felt it was his responsibility to do so. In contrast, physicians who provided some counselling and then referred or simply referred, indicated that the primary reason for their actions was one of competency, i.e., they felt sufficiently competent to begin the education process, but not to complete it, or did not feel competent with the question and thus referred the patient somewhere else. These results are indeed reasonable as they suggest that physicians who counselled themselves felt that they have a responsibility to do so, but when uncertain of their competence, they acknowledged this and initiated additional nutrition activities. The results are, however, in contrast to those of Modrow et al⁽⁴⁶⁾ and Wells et al⁽⁴⁷⁾ which indicated that lack of time was the reason most commonly offered for not dealing with patients' nutrition education needs. In this study, time was mentioned as the primary reason for action only 3.0% of the time. A possible explanation for this difference is that in the studies mentioned, the physicians may not have been offered other reasons from which to choose, and hence, time was mentioned as a first response. It is also possible, though unlikely, that Canadian physicians may have or perceive that they have more time for counselling than American physicians.

When comparing the primary reasons for action for patient vs physician-initiated scenarios, Table 51 reveals that here again, reasons differ. When patients asked physicians for nutrition information, the reason most often given by physicians for the action taken was that of physician responsibility (40.8%). In consideration of the

fact that for 95.7% of the patient-initiated scenarios, physicians reported that they at least counselled somewhat, it seems reasonable that the primary reason offered for this action was the physician felt it was his responsibility to attend to the patient request. In contrast, for physician-initiated scenarios, the primary reason given most often for the action was on the issue of competency (36.9%). In consideration of the fact that for 55.5% of the physician initiated scenarios, physician indicated that they referred, (either directly or after some counselling) it seems reasonable that the primary reason offered for this action was that the physician did not feel sufficiently competent to accomplish the task by himself which resulted in the referral.

In addition to the preset reasons offered for nutrition counselling actions, physicians were also afforded the opportunity to indicate if there were other reasons for their actions. The responses of the physicians were recorded and then categorized under broad subject headings. These results are listed on Tables 52 and 53. Many physicians who responded that they counselled themselves offered additional reasons for their action (Table 52). We see here that the reasons given vary, and are quite specific to the scenario. For example, for the patient-initiated scenarios of infant nutrition, osteoporosis, and cancer, the most common 'other' reason given dealt with ensuring that the patient received the correct information. This may be due to the fact that dietary factors in the etiology of osteoporosis and cancer are both quite contemporary and controversial issues and thus the physician wanted to be certain the patient received

the right message. That physicians want to be sure that mothers get correct information on the issue of infant nutrition may be reflective of their belief that proper infant nutrition is indeed essential⁽²⁹⁾ and mothers should be alerted to ward off unconventional dietary practices for their infants. For the patient-initiated scenario on the issue of the prevention of cardiovascular disease by diet modification, the 'other' reason given most often dealt with the issue of prevention. This perhaps reflects physician's acceptance that dietary modification is a viable means of reducing the risk of cardiovascular disease.⁽³⁹⁾ For the physician-initiated scenarios, noteworthy 'other' reasons for counselling included the prevention of other problems that may result from untreated hypercholesteolemia, constipation, and obesity. Here again, physicians' beliefs in the viability of health maintenance via prevention were apparent.

Several physicians who responded that they counselled and then referred also provided 'other' reasons for their actions. Of note in Table 53 is that for the scenarios on vegetarian diets, the 'other' reason most often given was that of fostering the physician-patient relationship. Perhaps physicians were feeling that they ought to at least say something about the patient's plans to practice the vegetarian diet to express their views about the potential nutritional problems with this diet if not done properly. For the scenarios relating to diabetes mellitus, hypercholesterolemia, lactose intolerance, and obesity, the most common 'other' reason for action offered dealt with ensuring that the patient received the correct information. It indeed seems reasonable that if the physicians did not feel

TABLE 49

Primary Reasons for Action - All Scenarios

Reason	n	%
Time	21	3
Responsibility	245	34.5
Competence	215	30.3
Patient Health	217	30.6
Interest	12	1.7
Total	710	100%

TABLE 50

Primary Reasons for Action in
Each Type of Activity

	Time	Respons- ibility	Competence	Patient Health	Interest	n
Counsel	8 (1.9%)	199 (46.4%)	67 (15.6%)	145 (33.8%)	10 (2.3%)	429
Counsel, then Refer	7 (2.9%)	48 (20.3%)	115 (48.7%)	64 (27.1%)	1 (0.4%)	236
Refer	2 (5.3%)	2 (5.3%)	33 (86.8%)	1 (2.6%)	0	38
Other	1 (14.3%)	0	4 (57.1%)	2 (28.6%)	0	7

n = 710

TABLE 51

Primary Reasons for Actions:
 Patient-Initiated vs Physician-Initiated Scenarios

	Time	Respons- ibility	Competence	Patient Health	Interest	n
Patient Initiated	12 (3.4%)	145 (40.8%)	84 (23.7%)	105 (29.6%)	9 (2.5%)	355
Physician Initiated	9 (2.5%)	100 (28.2%)	131 (36.9%)	112 (31.5%)	3 (0.8%)	355
	n = 21	n = 245	n = 215	n = 217	n = 12	710

$$\begin{aligned} \chi^2 &= 22.19 \\ df &= 4 \\ p &< .001 \end{aligned}$$

TABLE 52

Other Reasons for Counselling - Individual Scenarios

[illegible]

TABLE 53

Other Reasons for Counselling then Referring -
Individual Scenarios

Reason	Infant	Veg	Osteo	Can	Heart	Diab	Chol	Constip	Lac	Obesity
n =	3	40	6	10	10	51	43	0	25	46
No Response	1	28	5	6	6	25	24		18	18
Patient get Right Infor- mation	2	3	0	4	3	20	10		7	20
Patient/ Physician Relationship	0	5	1	0	1	2	4		0	3
Referral Mechanism	0	2	0	0	0	2	1		0	1
Competence	0	0	0	0	0	1	1		0	0
Patient Health	0	2	0	0	0	2	1		0	2
Prevention	0	0	0	0	0	0	0		0	1
Office	0	0	0	0	0	0	2		0	1

sufficiently competent to deal with the question entirely by themselves then they would be inclined to refer somewhere else where the patient would get the right information. For physicians who referred only, no additional reasons were given for this action.

Referral Sources used by Physicians for Nutritional Counselling

Physicians have access to a variety of nutrition counselling services in the Calgary area. In this study, if physicians responded that they either counselled, then referred, or just referred, they were then asked to indicate where they generally referred patients for the specific problem. Their responses were recorded and later categorized. From Tables 54 and 55, we see that physicians predominately referred to hospital dietitians, 79.2% when counselling, then referring and 81.6% when referring only. There are three additional noteworthy points from Table 54. Firstly, for weight control treatment, 41% ($n = 19$) of physicians refer to either hospital dietitians or commercial weight loss programs. This may be reflective of the fact that both types of services have similar success rates or that the physicians used both services depending on the patient's needs and preferences. The second noteworthy point is that other community resources were indeed being utilized for nutrition information, including such organizations as the Community Health Department, Canadian Heart Foundation, and Canadian Cancer Society reflecting that there is no one source of nutrition information in Calgary for patients. A final comment on this table is that, while the numbers are small ($n = 6$), some family physicians were

TABLE 54

Where Physicians Refer when 'Counselling,
then Refer' for Individual Scenarios

Reason	Infant	Veg	Osteo	Can	Heart	Diab	Chol	Constip	Lac	Obesity	
n =	3	40	6	10	10	51	43	0	25	46	n
Hospital RD Only	0	34	4	4	7	53	39		20	26	187
Hospital RD Commercial	0	0	0	0	0	0	0		0	19	19
Commercial Only	0	0	0	0	0	0	0		0	0	0
Other	0	2	2	4	2	0	0		1	0	11
Public Health	3	0	0	0	0	0	0		0	0	3
Private RD	0	2	0	0	0	0	0		0	0	2
Non- Dietary Medical Personnel	0	0	0	0	1	0	4		3	0	8
Unsure what's available	0	2	0	2	0	0	0		1	1	6

n = 235

187/235 = 79.2% refer to hospital
dietitians only.

TABLE 55

Where Physicians Refer when 'Referring'

Reason	Infant	Veg	Osteo	Can	Heart	Diab	Chol	Constip	Lac	Obesity	n
n =	1	5	0	2	0	11	4	0	10	5	
Hospital RD Only	1	5		2		10	4		6	3	31
Hospital RD Commercial	0	0		0	0	0	0		0	0	0
Commercial Only	0	0		0	0	0	0		0	2	2
Other	0	0		0	0	1	0		3	0	4
Unsure what's available	0	0		0		0	0		1	0	1

n = 38

31/38 = 81.6% Refer to Hospital Dietitians Only

not sure of what was available in the community for nutrition counselling. This should be of concern to medical educators and practicing nutritionists and dietitians to ensure that all physicians become aware of available nutritional counselling.

Factors Affecting Physicians' Nutrition Counselling Activities

There was a great deal of information collected in this study on selected demographic characteristics and perceptions of family physicians. The discussion that now follows focuses on how physicians with varying demographics and perceptions participated in nutrition counselling activities. Tables 56 through 64 show that there were no statistically significant differences in counselling activities for physicians with the following varying demographic characteristics: CCFP membership, type of office practice, hours worked per week, route of training to family medicine, and medical school attended. There were also no differences in counselling practices for physicians who had varying perceptions in the: adequacy of time available for counselling, quality of nutrition teaching in medical school, proximity to their ideal weight, personal dietary habits, number of patients seen per hour, and interest in nutrition. The writer now provides possible explanations for the lack of significant variance in counselling activities for these characteristics.

On the issue of CCFP membership (Table 56), the writer suspected that CCFP members may have counselled differently from non-members as a result of either the type of person who joins the association or the

TABLE 56

Counselling Activities of Physicians with
and without CCFP Membership

	Counsel	Counsel, then Refer	Refer	Other	
CCFP Members	309 (60.6%)	170 (33.3%)	25 (4.9%)	6 (1.2%)	510
Non Members	120 (60.0%)	66 (33.0%)	13 (6.5%)	1 (0.5%)	200
	429	236	38	7	n = 710

effect that membership may have on the way they practice, i.e., may have been more inclined to counsel as they felt it was their responsibility more-so than their non-member counterparts. This was, however, not the case as membership did not appreciably influence counselling behaviour.

For physicians who were in varying types of medical practice (Table 57), the writer suspected that those in group practice would refer more often perhaps because the group they belonged to may have made informal arrangements with certain nutrition counselling services. This did not, however, appear to be the case.

On the issue of hours worked per week (Table 58), while the differences in counselling activities are not greatly different, there is one noteworthy point. Physicians who worked greater than 25 hours per week seem to be slightly more inclined to engage in referring activities (39.5%) than their counterparts working part-time (36.3%). The writer indeed expected that busier physicians would refer more often, but obviously this is not a major factor influencing counselling behaviour.

Another demographic characteristic that did not significantly affect counselling behaviour was the physician's route of training to family medicine. There is, however, one interesting point from the results obtained as noted in Table 59. Physicians who participated in a one year rotating internship were more inclined to refer patients for nutrition counselling (44.2%) than those participating in a two year

family medicine residency (35.3%). Here, it is feasible that the greater time spent by residents interacting with patients (2 years), permitted greater exposure to patients with varying nutritional concerns and hence perhaps greater confidence was gained to deal with the concern themselves. This held true, but not to a large extent.

Physicians who graduated from different medical schools did not show significantly different counselling practices, as shown in Table 60. Most provided at least some counselling (91.5% - Canadian graduates (excluding the University of Calgary); 98.3% - University of Calgary graduates; 93.3% - non-Canadian graduates) reflecting that regardless of a physician's medical training, he attempted to deal with the patients' nutritional needs. Of note, however, is that University of Calgary graduates were the least likely to 'refer only'. Perhaps they felt the most qualified to deal with nutrition issues or had the most time to do so. The first explanation is unlikely since University of Calgary graduates were the most likely of all graduates to rate the quality of nutrition teaching as fair or poor (Table 18) and also the least likely to rate themselves as quite or very prepared to deal with nutrition issues (Table 23). Another possible explanation not directly addressed in this study is that physicians may not have felt at ease with the nutrition services available in Calgary or perhaps were not aware of what was available, thus resulting in fewer referrals. Another viable explanation is that University of Calgary graduates responded as they did (high counsellors) as they may have felt this to be the desired response by the investigator from the Faculty of Medicine at the University of Calgary; they were very critical of the

medical curriculum, but nonetheless offered the perceived desired response.

Physicians with varying perceptions of the adequacy of time available for counselling did not have significantly different counselling activities, but there is one noteworthy point from the results found in Table 61. Physicians who perceive that the adequacy of time available for counselling as satisfactory or fair to poor referred more often (7.1% and 6.7% respectively) than those who perceived it as good or excellent (2.7%). This is indeed reasonable since if they perceived they had less time for counselling, then they may have been more inclined to ask for assistance.

With respect to physicians' perceptions of the quality of nutrition teaching in medical schools, Table 62 reveals that those who rated the quality as fair to poor or satisfactory were less likely to participate in counselling activities, (93.1%, 95.5% respectively), than those who rated it as good to excellent (97.5%). While the differences are only slight, it nonetheless, seems reasonable since if physicians had access to a higher quality nutrition curriculum, they may have learned more and hence felt more comfortable providing nutrition counselling. Also of note from this table is, despite the fact that most physicians perceived the quality of nutrition teaching as fair or poor, they still predominately provided nutrition counselling themselves. It is possible that self-education via self-study or continuing education had increased confidence and/or that physicians

felt it was their responsibility to do so that was prompting them to provide the counselling.

With respect to physicians' perceptions of their overall dietary habits and proximity to ideal weight, despite the fact that the differences in counselling behaviors were not greatly different, there are, however, noteworthy points from Tables 63 and 64. Physicians who perceived their dietary habits as satisfactory or poor participated in referral activities more often (5.8%) than their counterparts with better dietary habits (4.7%). Likewise, physicians who were six to 50% above their ideal weight referred more often (40.4%) than their normal or below weight counterparts (37.9% and 33.3%, respectively). These results are in agreement with those of Wells et al⁽⁴⁷⁾ who found that physicians with poorer dietary habits were less likely to counsel patients about weight problems. The self referential principle noted by Wells, 'as long as your patient drinks (eats, smokes) less than you do, he's okay' may also be represented in this study.

Physicians also varied only somewhat in their counselling activities according to the number of patients seen per hour. From Table 65, we see that as the number of patients seen per hour increased, so did the likelihood that a physician 'referred only'. This indeed seems reasonable for the busier a physician is, the less likely he is to take time to provide nutrition counselling to patients.

Finally, a physician's interest in nutrition also only slightly affected his or her nutrition counselling behaviours. As physicians

Table 57

Counselling Activities of Physicians with
Varying Types of Medical Practices

	Counsel	Counsel, then Refer	Refer	Other	
Solo	187 (64.5%)	92 (31.7%)	9 (3.1%)	2 (0.7%)	290
Partnership	47 (52.2%)	32 (35.6%)	9 (10.0%)	2 (2.2%)	90
Group	189 (59.1%)	108 (33.8%)	20 (6.3%)	3 (1.0%)	320
Other	6 (60%)	4 (40.0%)	0	0	10
	429	236	38	7	n = 710

$$\begin{aligned} X^2 &= 9.04 \\ df &= 4 \\ p &< 0.10 \end{aligned}$$

*excludes 'other'
categories

Table 58

Counselling Activities of Physicians with
who Work Full and Part-Time

	Counsel	Counsel, then Refer	Refer	Other	
Hours Worked per Week	118 (62.1%)	61 (32.1%)	8 (4.2%)	3 (1.6%)	190
≥ 25	311 (59.8%)	175 (33.7%)	30 (5.8%)	4 (1.3%)	520
	429	236	38	7	n = 710

$$\chi^2 = 0.85$$

$$df = 2$$

$$p < 0.95$$

* excludes 'other'
category

Table 59

Counselling Activities of Physicians with
with Varying Routes of Training to Family Medicine

	Counsel	Counsel, then Refer	Refer	Other	
1 Year Rotating Intern- ship	104 (54.7%)	68 (35.8%)	16 (8.4%)	2 (1.1%)	190
2 Year Family Medicine Residency	168 (64.6%)	81 (31.1%)	11 (4.2%)	0 (0)	260
Other	157 (60.4%)	87 (33.5%)	11 (4.2%)	5 (1.9%)	260
	429	236	38	7	n = 710

$\chi^2 = 7.00$
 $df = 4$
 $p < 0.20$

* excludes 'other'
category

Table 60

Counselling Activities of Physicians who
Graduated from Different Medical Schools

	Counsel	Counsel, then Refer	Refer	Other	
CANADA EXCLUDING U of C	199 (56.9%)	121 (34.6%)	25 (7.1%)	5 (1.4%)	n = 350
UNIVERSITY of CALGARY	116 (64.4%)	61 (33.9%)	3 (1.7%)	0 (0)	n = 180
FOREIGN	114 (63.3%)	54 (30%)	10 (5.6%)	2 (1.1%)	n = 180
	429	236	38	7	n = 710

$$\chi^2 = 8.87$$

$$df = 4$$

$$p < 0.10$$

* excludes 'other'
category

Table 61

Counselling Activities of Physicians
with Varying Perceptions of the Adequacy
of Time Available for Counselling

	Counsel	Counsel, then Refer	Refer	Other	
Excellent or Good	164 (63.1%)	88 (33.8%)	7 (2.7%)	1 (0.4%)	260
Satisfactory	132 (55.0%)	88 (36.7%)	17 (7.1%)	3 (1.3%)	240
Fair or Poor	133 (63.3%)	60 (28.6%)	14 (6.7%)	3 (1.4%)	210
	429	236	38	7	n = 710

$$\chi^2 = 9.46$$

$$df = 4$$

$$p < 0.10$$

* excludes 'other'
category

Table 62

Counselling Activities of Physicians
with Varying Perceptions in the Quality
of Nutrition Teaching in Medical Schools

	Counsel	Counsel, then Refer	Refer	Other	
Excellent or Good	22 (55.0%)	17 (42.5%)	1 (2.5%)	0	40
Satisfactory	56 (62.2%)	30 (33.3%)	3 (3.3%)	1 (1.1%)	90
Fair or Poor	351 (60.5%)	189 (32.6%)	34 (5.9%)	6 (1.0%)	580
	429	236	38	7	n = 710

$$\chi^2 = 2.96$$

$$df = 4$$

$$p < 0.95$$

* excludes 'other'
category

Table 63

Counselling Activities of Physicians
with Varying Perceptions in their
Overall Dietary Habits

	Counsel	Counsel, then Refer	Refer	Other	
Very Good or Good	264 (61.4%)	141 (32.8%)	20 (4.7%)	5 (1.2%)	430
Satisfactory	138 (57.5%)	84 (35.0%)	16 (6.7%)	2 (0.8%)	240
Poor or Very Poor	27 (67.5%)	11 (27.5%)	2 (5.0%)	0 0	40
	429	236	38	7	n = 710

$$\chi^2 = 2.55$$

$$df = 4$$

$$p < 0.95$$

* excludes 'other'
category

Table 64

Counselling Activities of Physicians
with Varying Perceptions Regarding their
Proximity to their Ideal Weight

		Activity			
		Counsel	Counsel, then Refer	Refer	Other
Proximity to Ideal Weight	(+6 - 50%)	148 (59.2%)	84 (33.6%)	17 (6.8%)	1 (0.4%)
	(+5%)	261 (60.7%)	145 (33.7%)	18 (4.2%)	6 (1.4%)
	(-6 - 50%)	20 (66.7%)	7 (23.3%)	3 (10%)	0
		429	236	38	7
					n = 710

$$\chi^2 = 4.43$$

$$df = 4$$

$$p < 0.50$$

* excludes 'other'
category

Table 65

Counselling Activities of Physicians
who see Varying Numbers of Patients per Hour

	Counsel	Counsel, then Refer	Refer	Other	
1 - 3	36 (60%)	23 (38.3%)	1 (1.7%)	0	60
4 - 6	344 (61.4%)	188 (33.6%)	25 (4.5%)	3 (0.5%)	560
7 - 10	39 (55.7%)	18 (25.7%)	9 (12.9%)	4 (5.7%)	70
	429	236	38	7	n = 710

$$*X^2 = 12.45$$

$$df = 4$$

$$p < .025$$

*excluding 'other' category

Table 66

Counselling Activities of Physicians
with Varying Interest in Nutrition

	Counsel	Counsel, then Refer	Refer	Other	
Moderately or Very Interested	327 (61.7%)	176 (33.2%)	25 (4.7%)	2 (0.4%)	530
Somewhat Interested	83 (55.3%)	55 (36.7%)	8 (5.3%)	4 (2.7%)	150
Moderately or Very Un- interested	19 (63.3%)	5 (16.7%)	5 (16.7%)	1 (3.3%)	30
	429	236	38	7	n = 710

* χ^2 = 11.58
df = 4
p < .025

* excludes 'other' category

expressed more interest in the topic, they were less likely to refer only (4.7% moderately to very interested, 16.7% moderately to very uninterested),(Table 66). The results are also quite reasonable since if someone is interested in something, he may be more likely to do the activity himself than to assign the task to someone else.

There were statistically significant differences ($p < .01$) in physicians' nutrition counselling activities for the following characteristics: physician sex, year of birth, year of graduation from medical school, perception of preparedness to deal with nutrition issues, and perception of the importance of nutrition to disease prevention and treatment.

As seen in Table 67, male physicians were more likely to refer only, whereas all female physicians did at least some counselling; none referred only. This may suggest that female physicians felt more compelled to assist patients with nutrition education rather than having them wait for that information from another source. This seems to be supported from previous studies.(52, 54) It may also suggest that patients may have felt more comfortable with female physicians and thus more often requested that they provide the information.

With respect to physicians age, Tables 68 and 69 reveal that older physicians (those born before 1939 or graduated from medical school before 1959), were more likely to 'refer only' than younger physicians. This may be so for the following reasons. Older physicians may not have felt as competent to deal with nutrition issues themselves or felt

they were too busy to attend to the issue. As previously shown, however, there were no differences among physicians of different age groups regarding their preparedness to deal with nutrition issues. It appears then, rather, that time is a critical factor since older physicians were more likely to see greater numbers of patients per hour (Table 12) than younger physicians and also more often felt that time available for counselling was only fair to poor (Table 13).

Physicians varied in their nutrition counselling behaviours according to how prepared they felt to deal with nutrition issues. As seen from Table 70, as physicians' perceived preparedness to deal with nutrition issues worsened, so did their likelihood to participate in referring activities. This is indeed reasonable since if one feels less confident about doing something, one may be more likely to assign the task to someone else. This result is also in agreement with that of Wells et al⁽⁴⁷⁾ who found that, on the issue of smoking cessation, physicians with high perceived skill in counselling, did so more aggressively, and those with low perceived skill, counselled less often.

On the issue of physicians' perceptions of the importance of nutrition to disease prevention, Table 71 shows that physicians who viewed nutrition as moderately to very important to disease prevention were more likely to engage in counselling activities (94.4%) than those who perceived it as somewhat important (80.0%). This indeed seems reasonable since if one feels the giving of the information is important to a patient's health, then one may be more likely to take the

action himself and ensure that the task is accomplished. The same was also true for physicians' perceptions of the importance of nutrition to disease treatment (Table 72).

Table 67

Counselling Activities of Male and Female Physicians

	Counsel	Counsel, then Refer	Refer	Other	
Male	311 (61%)	156 (30.6%)	38 (6.9%)	5 (1.0%)	510
Female	118 (59.0%)	80 (40.0%)	0	2 (1.0%)	200
	429	236	38	7	n = 710

* $\chi^2 = 18.83$

df = 2

p < .001

*excluding 'other category'

Table 68

Counselling Activities of Physicians from
Different Age Groups

Year of Birth		Counsel	Counsel, then Refer	Refer	Other	
	≤ 1939	137 (62.3%)	59 (26.8%)	21 (9.5%)	3 (1.4%)	220
	1940 - 49	132 (55%)	93 (38.8%)	12 (5%)	3 (1.3%)	240
	1950 - 59	160 (64%)	84 (33.6%)	5 (2%)	1 (0%)	250
		429	236	38	7	n = 710

* $\chi^2 = 19.29$

df = 4

p < .01

*excluding 'other'

Table 69

Counselling Activities of Physicians
Graduating in Different Years

	Counsel	Counsel, then Refer	Refer	Other	
≤ 1959	87 (62.1%)	36 (25.7%)	16 (11.4%)	1 (0.7%)	140
1960 - 69	57 (51.8%)	44 (40.0%)	6 (5.5%)	3 (2.7%)	110
1970 - 79	205 (62.1%)	110 (33.3%)	13 (3.9%)	2 (0.6%)	330
≥ 1980	80 (61.5%)	46 (35.4%)	3 (2.3%)	1 (0.8%)	130
	429	236	38	7	n = 710

$$*X^2 = 18.79$$

$$df = 6$$

$$p < .005$$

*excluding 'other' category

Table 70

Counselling Activities of Physicians
with Varying Self-Perceptions' of
Preparedness to Deal with Nutrition Issues

	Counsel	Counsel, then Refer	Refer	Other	
Quite or Very Prepared	167 (64.2%)	88 (33.8%)	5 (1.9%)	0	260
Neither Prepared nor Unprepared	200 (60.6%)	108 (32.7%)	19 (5.8%)	3 (6.7%)	330
Quite or Very Unprepared	62 (51.7%)	40 (33.3%)	14 (11.7%)	4 (3.3%)	120
	429	236	38	7	n = 710

$$*X^2 = 17.05$$

$$df = 4$$

$$p < .005$$

*excluding 'other' category

Table 71

Counselling Activities of Physicians
with Varying Perceptions of the
Importance of Nutrition to Preventing Disease

	Counsel	Counsel, then Refer	Refer	Other	
Moderately or Very Important	407 (60.7%)	226 (33.7%)	31 (4.6%)	6 (0.9%)	670
Somewhat Important	22 (55.0%)	10 (25.0%)	7 (18.5%)	1 (2.5%)	40
	429	236	38	7	n = 710

* $\chi^2 = 12.94$
df = 2
p < .005

*excluding 'other' category

Table 72

Counselling Activities of Physicians
with Varying Perceptions in the
Importance of Nutrition to Disease Treatment

	Counsel	Counsel, then Refer	Refer	Other	
Moderately or Very Important	371 (60.8%)	208 (34.1%)	27 (4.4%)	4 (0.7%)	610
Somewhat Important	49 (54.4%)	27 (30.0%)	11 (12.2%)	3 (3.3%)	90
Moderately or Very Unimportant	9 (90%)	1 (10.0%)	0	0	10
	429	236	38	7	n = 710

$$\begin{aligned}
 *X^2 &= 9.85 \\
 df &= 2 \\
 p &< .01
 \end{aligned}$$

*excludes 'other' category

CHAPTER VI

SUMMARY

General Discussion

Calgary family physicians participate in a variety of nutrition counselling activities. Given the opportunity for counselling on 10 selected nutrition problems, physicians reported that they most frequently provided the counselling themselves, followed by the activity of "provide some counselling, then refer to another source," and finally, "refer to another source". The reported nutrition counselling activity varied depending on the type of scenario encountered. When patients asked physicians for nutrition related information, the physician most often provided the counselling himself. In contrast, when the physician had diagnosed a medical problem that warranted nutrition intervention, he was more likely to initiate referral activities. That physicians most often counselled patients on the patient-initiated scenarios may be due to the physicians' perceived responsibility or obligation to respond to a patient question and also to the fact that these scenarios required less in-depth nutritional knowledge than the physician-initiated scenarios.

The reasons cited by physicians most often for their actions involved the issues of the physicians' perceptions of a) their perceived responsibility to provide the nutrition information, b) their perceived competence to handle the nutrition counselling and c) the

importance of the counselling to the patient's health. Here again, the reason for actions differed depending on the type of scenario. For patient-initiated scenarios, the most common reason for action (more counselling and less referrals) was that the physician felt it was his responsibility to respond to the patient request. In contrast, for the physician-initiated scenarios, the reason cited most often for the action (more referrals and less counselling) dealt with the issue of competence. It appears, therefore, that physicians perceived the provision of nutrition information as part of their responsibility in caring for the patient, but when uncertain of their competence, they referred the patient for additional information. Referrals were made most often to trained professionals, hospital-based dietitians.

That physicians reported that they most often provided nutritional counselling to patients is of particular interest in light of the following facts. The high counselling rate is reasonable considering that most physicians reported to being quite interested in the topic of nutrition, and felt that nutrition was important both in the prevention and treatment of disease. The high counselling rate is surprising however, since approximately only one third of the physicians felt quite or very prepared to deal with nutrition issues and only about five percent felt that the quality of nutrition teaching in their medical schools was good or excellent.

There were statistically significant differences in counselling activities for the following variables: physician sex, year of birth, year of graduation from medical school, perception of preparedness to

deal with nutrition issues and perception of the importance of nutrition to disease prevention and treatment. Counselling vs referring predominated in females and in younger physicians. Whether it is the gender or age that is really associated with the high counselling is difficult to determine since most of the young physicians were indeed female. Participation in counselling activities also increased as the physicians' perceived preparedness to deal with nutrition issues improved, and also as the physicians' perceptions of the importance of nutrition to disease prevention or treatment improved. These differences, however, were not unexpected and indeed seem very reasonable.

Implications for Future Research

This study provides baseline information regarding Calgary family physicians' self reported nutrition counselling activities. It sets the stage for several subsequent questions, some of which are now listed.

Firstly, with respect to the study design, it should be noted that the results here are self reports by physicians of their counselling behaviors. It would be of additional interest and value to:

- ascertain the extent to which patients agree with the reported counselling activities of physicians;
- assess the quality of the counselling sessions.

Secondly, with respect to the fact that this study revealed that physicians reported that they predominately provided nutrition counselling, the following questions should now be asked:

- Do physicians believe that it is their responsibility to provide nutrition information?
- How do physicians rate the adequacy and quality of available nutrition counselling services in Calgary?

- . If additional nutrition counselling services were available, would physicians utilize them and hence be less inclined to counsel patients themselves?

Once these questions are answered, one can then precisely design nutrition curriculum in medical schools to meet the needs of the family physician. This study has indeed revealed that, with respect to a physician's nutrition education, existing nutrition curriculum in medical school is viewed as deficient and physicians learn most about nutrition via self study. This should prompt medical educators to review existing nutrition curricula in medical schools and also provide incentives for continuing medical educators to offer high quality nutrition programs on a regular basis.

REFERENCES

1. Krause, M.V. and Mahan, L.K. (1984) Food, Nutrition, and Diet Therapy. Philadelphia: W.B. Saunders Co.
2. Committee on Nutrition and Medical Education (1985) Nutrition in U.S. Medical Schools. Washington: National Academy Press.
3. A Concensus Report: National Institutes of Health Consensus Development Conference Statement Lowering Blood Cholesterol. Nutrition Today. Jan - Feb. 1985: 13.
4. Linder, M.C. (1985) Nutrition and Cancer Prevention in Nutritional Biochemistry and Metabolism. New York: Elsevier.
5. Bright-See, E. (1985) The Osteoporosis Puzzle. Canadian Enteral Bulletin 1: 1.
6. Nutrition Concepts Study (1979). Department of National Health and Welfare. Ottawa.
7. Hataway, H., Raines, J.L., and Weinsier, R.L. (1984). Nutrition: It's Ever Increasing Role. Family And Community Health. 7(1): 22.
8. Oberman, A. (1984) Components of Health Promotion. Family and Community Health. 7: 22.
9. Select Committee on Nutrition and Human Needs (1977). U.S. Senate: Dietary Goals for the United States. Washington D.C.: Government Printing Office.
10. Sabry, Z.I. (1975) The Cost of Malnutrition in Canada. Can.J. Public Health. 66: 291.
11. The Active Health Report - Perspectives on Canada's Health Promotion Survey 1985. Health and Welfare Canada.
12. Barr, S.I. (1986) Nutrition Knowledge and Selected Nutritional Practices of Female Recreational Athletes. J. Nutr. Educ. 18(4): 167.
13. Yankelovich, Skelly, and White, Inc. (1979) The General Mills American Family Report 1978-1979. Minniapolis: General Mills Inc.
14. Health People - The Surgeon General's Report on Health Promotion and Disease Prevention (1979) U.S. Department of Health, Education, and Welfare.
15. Sherwood, K. Nutrition and Foodservice, National Restaurant Association Current Issues Report. Washington, D.C. NRA 1984, p.1-12.

16. Heimbach, J.T. (1985) Cardiovascular Disease and Diet: The Public View. Public Health Rep. 100(1): 5.
17. Pierce, D.K., Connor, S.L., Sexton, G., Calvin, L., Connor, W.E., and Mtarazzo, J.D. (1984) Knowledge of and Attitudes toward Coronary Heart Disease Nutrition in Oregon Families. Prev. Med. 13: 390.
18. Ontario Nutrition Information Needs Assessment Survey (1983) Department of National Health and Welfare. Ottawa.
19. Nutrition Canada (1973). Department of National Health and Welfare. Ottawa.
20. Calgary Health Services (1984). Mission Statement and Goals.
21. Alberta Division of the Canadian Cancer Society (1986). Priority Issues for Prevention Against Cancer.
22. Alberta Heart Foundation/Canadian Heart Foundation (1983). Statement of Objectives.
23. Canadian Dietetic Association. Strategic Plan 1985-86.
24. Warner, K.E. (1987) Television and Health Education: Stay Tuned. Amer. J. Pub. Health 77(2): 140.
25. Shoaf, L.R., McClellan, P.D. and Birskevich, K.A. (1986) Nutrition Knowledge, Interests, and Information Sources of Male Athletes. J. Nutr. Educ. 18(6): 243.
26. Lambert - Lagace, L. (1983) Media, Nutrition Information, and Consumer Reactions. J. Nutr. Educ. 15(1): 6.
27. Spitze, H.T. (1983) Nutrition Knowledge of a Sample of University - Employed Men. J. Nutr. Educ. 15(2): 54.
28. Rahn, M.J. and Sabry, J.H. (1984) Nutrition Knowledge of a Sample of Urban Women. Can. J. Public Health. 75: 123.
29. Schwartz, N. and Barr, S. (1977) Mothers: Their Attitudes and Practices in Prenatal Nutrition. J. Nutrition Education 9(4): 169.
30. David, A.K. and Boldt, J.S. (1980) A Study of Preventive Health Attitudes and Behaviors in a Family Practice Setting. J. Fam. Pract. 11: 77.
31. Hyatt, J.D. (1980) Perceptions of the Family Physician by Patients and Family Physicians. J. Fam. Pract. 10: 295.
32. Hatcher, G. (1981) Universal Free Health Care in Canada. U.S. Department of Health and Human Services.

33. Medalie, J.H. (1978) Family Medicine. Baltimore: Williams and Wilkins, Co.
34. Harris, C.M. (1980) Lecture Notes on Medicine in General Practice. London: Blackwell Scientific Publications.
35. Barber, J.H. (1984) General Practice Medicine. New York: Churchill-Livingstone.
36. Lalonde M. (1974) A New Perspective on the Health of Canadians. Canada. Department of National Health & Welfare.
37. Wechsler, H., Levine, S., Idelson, R., Rohnman, M., and Taylor, J.O. (1983) The Physicians Role in Health Promotion - A Survey of Primary Care Practitioners. N. Engl. J. Med. 308: 97.
38. Sobal, J., Valente, C.M., Muncie, H.L., Levine, D.M., and Deforge, B.R. (1985) Physicians Beliefs About the Importance of 25 Health Promoting Behaviors. Am. J. Public Health. 75: 1427.
39. Kotte, T.E., Foels, J.K., Hill, C., Choi, T., and Fenderson, D.A. (1984) Nutrition counselling in Private Practice: Attitudes and Activities of Family Physicians. Prev. Med. 13: 219.
40. Steiger, H., Leichner, P., and Ghadirian, A.M. (1987) Perspective on the Prevention of Anorexia Nervosa and Bulimia. Can. Fam. Physician 33: 145.
41. Straw, W.E. (1986) Obesity - A Killer Disease. J. Fam. Pract. 22: 461.
42. Thomas, D., Anstett, R.E., and Poole, S.R. (1983) Obesity and Weight Control. J. Fam. Pract. 16: 29.
43. Rolig, E. (1985) Diet and Constipation, J. Fam. Pract. 21: 337.
44. Otradovec, K., Blake, R.L., and Parter, B.M. (1985) An Assessment of the Practice of Preventive Cardiology in an Academic Health Center. J. Fam. Pract. 21: 125.
45. Gjerde, C.L. and Sinnott, S. (1982) Nutrition Skills: Perceived Importance and Self-Reported Performance by Family Physicians. Fam. Med. 14(3): 8.
46. Modrow, C.L., Miles, C.W., Koerin, S., Dobek, J., Book, P., and Honaker, L. (1980) Survey of Physician and Patient Nutrition Education Needs. J. Amer. Dietet. Assoc. 77: 686.
47. Wells, K.B., Ware, J.E., and Lervics, C.E., (1984) Physicians Practices in Counselling Patients about Health Habits. Med. Care. 22: 240.
48. Wells, J.B., Lewis, C.E., Lake, B., and Ware, J.E. (1984) Do Physicians Preach what they Practice? JAMA 252: 2846.

49. Mason, J., Wenberg, B.G., and Welsch, P.K. (1977) *The Dynamics of Clinical Dietetics*. New York: John Wiley and Sons.
50. Rosenstock, I. (1974) Historical Origins of the Health Belief Model. Health Education Monograph. 2(4): 244.
51. Cartright, A. (1978) Professionals as Responders; Variations in and Effects of Response Rates to Questionnaires. Br. Med. J. 1878: 2: 1419.
52. Rowe, I.L., Findlay, D.J., and Carson, N.E. (1986) Workload Differences Between Male and Female Doctors. Aust. Fam. Phys. 15(9): 1145.
53. Ogle, K.S., Henry, R.C. Durda, K. and Zivick, J.D. (1986) Gender-Specific Differences in Family Practice Graduates. J. Fam. Pract. 23(4): 357.
54. Smedstad, K. (1986) Women in Medicine: "I think we've come of age". Can. Med. Assoc. J. 135: 794.
55. Nutrition in Medical Education (1983) The Lancet. June 25, 1983: 1430.
56. Rimpela, A.H., Nurminen, M.M., Pulkkinen, P.O., Rimpela, M.K., and Valkonen, T. (1987) Mortality of Doctors: Do Doctors Benefit from their Medical Knowledge? Lancet Jan, 10, 1987: 84.
57. Ellsbury, K., Schneeweiss, R., Montario, D.E., Gordon, K.C. and Kuy Kendall (1987). Gender Differences in Practice Characteristics of Graduates of Family Medicine Residencies. J. Med. Educ. 62: 895.
58. Gerbert, B. and Hargreaves, W. A. (1986) Measuring Physician Behavior. Med. Care 24(9): 838.
59. Cleary, P.D. and Jette, A.M. (1984) The Validity of Self-reported Physician Utilization Measures. Med. Care 22(9): 796.

Appendix A

File: _____

Physician Profile Sheet Part A

Please complete the following items

1. Which of the following best describes your current medical practice?
 ___ solo
 ___ partnership
 ___ group: How many other physicians practice in your group? ___
 ___ other (specify) _____

2. Approximately how many hours per week do you see patients in your office? _____
3. In you general practice, can you approximate the average number of patients you see per hour? _____
4. Please indicate the adequacy of time available for patient education in your present practice.
 ___ excellent ___ good ___ satisfactory ___ fair ___ poor
5. From which medical school did you receive your undergraduate medical degree?

6. In what year did you graduate from medical school? _____
7. Upon graduation from medical school, what route of training did you take to become a family physician?
 _____ 1 year rotating internship
 _____ 2 year family medicine residency
 _____ other, specify _____
8. How would you rate the quality of nutrition teaching in your medical school at the time you were a student?
 ___ excellent ___ good ___ satisfactory ___ fair ___ poor

9. **Reflecting back on your entire medical training, where do you feel you learned most about nutrition?** (more than one may be selected)
- ☐ medical school
 - ☐ internship
 - ☐ residency
 - ☐ fellowship
 - ☐ self study
 - ☐ other, specify
10. **In general, how prepared or unprepared do you feel to deal with nutrition issues in your practice?**
- ☐ very prepared
 - ☐ quite prepared
 - ☐ neither prepared nor unprepared
 - ☐ quite unprepared
 - ☐ extremely unprepared
11. **In general, how important or unimportant do you feel that nutrition is to maintaining health and preventing disease**
- ☐ very important
 - ☐ moderately important
 - ☐ somewhat important
 - ☐ moderately unimportant
 - ☐ very unimportant
12. **In general, how important or unimportant is nutrition to treating disease?**
- ☐ very important
 - ☐ moderately important
 - ☐ somewhat important
 - ☐ moderately unimportant
 - ☐ very unimportant
13. **How would you rate your general interest in nutrition?**
- ☐ very interested
 - ☐ moderately interested
 - ☐ somewhat interested
 - ☐ moderately uninterested
 - ☐ very uninterested
14. **Sex:** ☐ male ☐ female
15. **What is the year of your birth?** _____
16. **What nutrition topics, if any, would you like to learn more about?**
- _____
 - _____
 - _____

17. How would you rate your personal overall dietary habits?
___ very good ___ good ___ satisfactory ___ poor ___ very poor
18. How close do you think you are to your ideal weight?
___ 21 - 50% below ideal weight
___ 6 - 20% below ideal weight
___ 5% below - 5% above ideal weight
___ 6 - 20% above ideal weight
___ 21 - 50% above ideal weight
19. Are you a CCFP member?
___ yes ___ no

Appendix BNutrition Scenarios

Patient-Initiated

A 25 year old female has recently given birth to a full term normal baby, now two months old. The mother is breastfeeding the child without difficulty. The mother asks you when solid food and cow's milk can be introduced as well as what vitamin supplements the child should be taking. What action, if any, do you take?

A 25 year old female has decided to become a strict vegetarian and wants to know if it will harm her health. What action, if any, do you take?

A 40 year old female wants to know about her risk of developing osteoporosis. One of her concerns is her diet and whether she's consuming enough calcium. What action, if any, do you take?

A 36 year old healthy male wants to know about the relationship between diet and cancer. What action, if any, do you take?

A 56 year old healthy male wants to know about the relationship between diet and heart disease. What action, if any, do you take?

Nutrition Scenarios

Physician-Initiated

You've diagnosed a 50 year old overweight female with adult onset diabetes mellitus. What type of nutrition practice, if any, do you initiate?

A 35 year old male with a family history of atherosclerotic heart disease is hypercholesterolemic. What type of nutrition practice, if any, do you initiate?

A 20 year old female has functional constipation. What type of nutrition practice, if any, do you initiate?

A 50 year old Oriental male has repeated complaints of abdominal bloating and diarrhea after consumption of milk. A diagnosis of lactose intolerance has been confirmed. What type of nutrition practice, if any, do you initiate?

A 20 year old male is 50% above his ideal weight for height. All possible metabolic causes of obesity have been ruled out and you're suspecting the cause is poor dietary habits. What type of nutrition practice, if any, do you initiate?

Do You:

- (1) Provide counselling yourself;
- (2) Provide some counselling myself and then refer the patient somewhere else for additional information;
- (3) Refer somewhere else;
- (4) Do not counsel, do not refer.

Do You:

____(1) Provide counselling myself.

a. What do you consider as counselling?

____(1) talking with the patient until it appears
he/she understands the information

____(2) provide the patient with written
information and offer them a return visit
for additional information

____(3) both of the above

____(4) other

b. Reflecting on the action you've just described,
can you identify the primary reason or reasons
for this action?

____(1) I had sufficient time to provide the
necessary information

____(2) I felt it was my responsibility as a physician
to provide the patient with this information

____(3) I felt competent in the subject area to
provide the information

____(4) I felt it was important to the patients health
to provide the information

____(5) I was interested in the subject matter and
therefore wanted to provide the information

c. Are there any other reasons you can think of why you
provided counselling to this patient?

____(2) Provide some counselling myself and then refer the patient somewhere else for additional information.

a. What do you consider as counselling?

____(1) talking with the patient until it appears he/she understands the information

____(2) provide the patient with written information and offer them a return visit for additional information

____(3) both of the above

____(4) other _____

b. Reflecting on the action you've just described, can you identify the primary reason or reasons for this action?

____(1) I had the time to provide the preliminary information, but not enough to provide complete information

____(2) I felt it was my responsibility to give the preliminary information, but someone else's job to complete the task

____(3) I felt qualified to give preliminary information, but felt that someone else could give more complete information

____(4) I felt it was important to the patients health to give preliminary information, but more complete information could come at a later date

____(5) I was interested in the topic to give preliminary information but not enough to complete the task

c. Are there any other reasons you provide some counselling yourself and then refer the patient somewhere else for this problem? _____

d. Where do you generally refer patients for nutrition counselling on this problem? _____

____(3) Refer somewhere else

a. Where do you generally refer patients for this information?

b. Reflecting on the action you've just described,
can you identify the primary reason or reasons
for this action?

____(1) I didn't have enough time to provide the required
information

____(2) I felt it was someone else's responsibility to
provide the information

____(3) I felt someone else could do a better job than me
in providing the information

____(4) I didn't feel it was that important to the patient's
health to provide the information at this time

____(5) I wasn't interested enough in the topic to provide
the patient with information

c. Are there any other reasons you can think of why you refer
patients somewhere else for this problem?_____

____(4) Do not counsel, do not refer

a. Reflecting on the action you've just described, can you identify the primary reason or reasons for this action?

____(1) I didn't have sufficient time to get involved in the issue

____(2) I didn't think it was my responsibility to get involved in this issue

____(3) I didn't feel qualified to take any action regarding the issue

____(4) I didn't think the information was important to the patients health

____(5) I wasn't interested in the topic to pursue the issue

b. Are there any other reasons why you didn't take any action in this matter? _____

Appendix C

Dear Dr. _____:

I am writing to invite you to participate in a research study designed to examine the extent to which family physicians (a) provide nutrition information to patients and (b) utilize nutrition services in Calgary. The focus here is not on the content of information provided, but rather on the action taken by physicians in providing nutrition information to patients.

I am presently enrolled in the Master of Science program at the University of Calgary and am the principal investigator in this research effort. The study is supervised by Dr. Reg Sauve, Department of Pediatrics and Community Health Sciences, with assistance from Drs. Bruce Challis, Department Head of Family Medicine, Foothills Hospital; Heather Bryant, Department of Community Health Sciences; and Lawrence A. Fisher, Office of Medical Education, University of Calgary.

Participation in the study includes a personal interview with myself that will last 15-30 minutes. The date, time, and location of the interview are your choice. Your responses from the interview will be kept confidential and will be used exclusively for the purpose of this study. The results will be presented only in summary form, and individual participants will not be identified.

I would like you to consider participating in this investigation as the results will help to determine the adequacy of nutrition services in Calgary to meet the needs of the patients of family physicians. I will phone you in 1 - 2 weeks time to hear of your decision. If you decide to participate, we can make arrangements at that time for the interview.

I greatly appreciate your attention to this matter.

Yours truly,

Mary Sue Waisman,
Graduate Student
Department of Community
Health Sciences