

DOCUMENT RESUME

ED 085 443

UD 013 933

TITLE Nutrition Education--1973. Part 7--School Nutrition Education Programs. Hearings Held Pittsburgh, Pa., May 25, 1973. Hearings Before the Select Committee on Nutrition and Human Needs of the United States Senate, Ninety-third Congress, First Session.

INSTITUTION Congress of the U.S., Washington, D. C. Senate Select Committee on Nutrition and Human Needs.

PUB DATE 25 May 73

NOTE 68p.; Committee Print, Senate Select Committee on Nutrition and Human Needs

AVAILABLE FROM Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 (Stock No. 5270-00237, \$0.65)

EDRS PRICE MF-\$0.65 HC-\$3.29

DESCRIPTORS *Curriculum Development; Dental Schools; Dietetics; Educational Finance; *Elementary Education; Food Standards; Health; Health Education; Medical Education; *Medical Schools; Nutrition; *Nutrition Instruction; Program Development; *Secondary Education

IDENTIFIERS Pennsylvania

ABSTRACT

The following witnesses testified before these hearings of the Select Committee on Nutrition and Human Needs: Mrs. G. Marsh, area consultant, Division of Food and Nutrition Services, Pennsylvania Department of Education; Mrs. G. Chegwidder, director, School Food Service, Franklin Regional School District, Murrysville, Pa.; Mr. S. Lympny, senior student, Franklin Regional High School; Miss C. Murray, sixth grade student, Sloan Elementary, Franklin Regional School District, Murrysville, Pa.; Mrs. K. D. Schaum, registered dietician, assistant professor nutrition, Indiana University of Pennsylvania; Miss J. Gray, sophomore, food and nutrition major, Indiana University of Pennsylvania; Dr. S. Schultz, University of Pittsburgh School of Medicine, Pittsburgh, Pa.; Mr. R. I. Lehman, third year student, Temple University School of Medicine, Philadelphia, Pa.; Dr. D. S. Thompson, director of community medicine, Department of Obstetrics and Gynecology, Magee-Women's Hospital; Mrs. D. Kolodner, nutrition consultant, Ob-Gyn Medical Care Center, Magee-Women's Hospital, Pittsburgh, Pa.; and Dr. M. Theiner, assistant professor, Department of Biochemistry, School of Dental Medicine. Appended materials include statements from M. A. Scialabba on "Status of nutrition education in nursing and allied health professions" and M. F. Gloninger on "Need for nutrition education in medical and dental schools. [Parts of this document may not be clearly legible due to the size of the print in the original.]

(JM)

ED 085443

NUTRITION EDUCATION—1973

HEARINGS BEFORE THE SELECT COMMITTEE ON NUTRITION AND HUMAN NEEDS OF THE UNITED STATES SENATE NINETY-THIRD CONGRESS FIRST SESSION

PART 7—SCHOOL NUTRITION EDUCATION PROGRAMS
PITTSBURGH, PA., MAY 25, 1973

Series 73/NE7

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

UD 013933

Printed for the use of the Select Committee on Nutrition and Human Needs

U.S. GOVERNMENT PRINTING OFFICE

97-409

WASHINGTON : 1973

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C. 20402 - Price 65 cents
Stock Number 5270-00237



SELECT COMMITTEE ON NUTRITION AND HUMAN NEEDS

GEORGE McGOVERN, South Dakota, *Chairman*

HERMAN E. TALMADGE, Georgia

PHILIP A. HART, Michigan

WALTER F. MONDALE, Minnesota

EDWARD M. KENNEDY, Massachusetts

GAYLORD NELSON, Wisconsin

ALAN CRANSTON, California

HUBERT H. HUMPHREY, Minnesota

CHARLES H. PERCY, Illinois

MARLOW W. COOK, Kentucky

ROBERT DOLE, Kansas

HENRY BELLMON, Oklahoma

RICHARD S. SCHWEIKER, Pennsylvania

ROBERT TAFT, Jr., Ohio

KENNETH SCHLOSSBERG, *Staff Director*

NUTRITION EDUCATION:

Part 1 and 1A—Overview—Consultants' Recommendations,
Dec. 5, 1972; with Appendix.

Part 2 and 2A—Overview—The Federal Programs,
Dec. 6, 1972; with Appendix.

Part 3—TV Advertising of Food to Children, March 5, 1973.

Part 4—TV Advertising of Food to Children, March 6, 1973.

Part 5—TV Advertising of Food to Children, March 12, 1973.

Part 6—Phosphate Research and Dental Decay, April 16, 1973.

Part 7—School Nutrition Education Programs, May 25, 1973.

Part 8—Broadcast Industry's Response to TV Ads, June 11, 1973.

CONTENTS

NUTRITION EDUCATION School Nutrition Education Programs

FRIDAY, MAY 25, 1973

	Page
Opening statement by Senator Schweiker, presiding.....	597
WITNESSES IN CHRONOLOGICAL ORDER	
Marsh, Mrs. Gertrude, area consultant, Division of Food and Nutrition Services, Pennsylvania Department of Education; accompanied by Chegwidde, Mrs. Gwen, director, School Food Service, Franklin Regional School District, Murrysville, Pa.; with Lympny, Mr. Steve, senior student, Franklin Regional High School, and Murray, Miss Cary, sixth grade student, Sloan Elementary, Franklin Regional School District, Murrysville, Pa.....	599
Schaum, Mrs. Kathleen D., registered dietitian, assistant professor of nutrition, Indiana University of Pennsylvania; and Gray, Miss Janice, sophomore, food and nutrition major, Indiana University of Pennsylvania.....	613
Schultz, Dr. Stanley, University of Pittsburgh School of Medicine, Pittsburgh, Pa.; and Lebmaw, Mr. Ronald L., third year student, Temple University School of Medicine, Philadelphia, Pa.....	622

AFTERNOON SESSION

Thompson, Dr. Douglass S., director of community medicine, Department of Obstetrics and Gynecology, Magee-Women's Hospital, accompanied by Kolodner, Mrs. Dorothy, nutrition consultant, Ob-Gyn Medical Care Center, Magee-Women's Hospital, Pittsburgh, Pa.; and Theiner, Dr. Micha, assistant professor, Department of Biochemistry, School of Dental Medicine, University of Pittsburgh.....	635
---	-----

APPENDIX

From Mary Ann Scialabba: Status of nutrition education in nursing and allied health professions..	659
From Margaret F. Gloninger: Need for nutrition education in medical and dental schools.....	661

(III)

NUTRITION EDUCATION
School Nutrition Education Programs

FRIDAY, MAY 25, 1973

U.S. SENATE
SELECT COMMITTEE ON
NUTRITION AND HUMAN NEEDS,
Washington, D.C.

The select committee met at 10:35 a.m., pursuant to call, in room 2212-14 of the Federal Building at Pittsburgh, Pa., the Honorable Richard S. Schweiker, presiding.

Present: Senator Schweiker.

Staff member: Elizabeth P. Hottell, minority professional staff.

Senator SCHWEIKER. The Senate Select Committee on Nutrition and Human Needs will please come to order.

I would like to take this opportunity to thank the distinguished committee chairman, Senator George McGovern, for allowing me to hold hearings on nutrition education in Pittsburgh today.

OPENING STATEMENT OF SENATOR RICHARD S. SCHWEIKER
PRESIDING

Senator SCHWEIKER. Last December, I chaired Nutrition Committee hearings in Washington, D.C., and raised the question: "Are we a nation of nutritional illiterates?" The witnesses that day, including the distinguished nutrition expert from Harvard University, Dr. Jean Mayer, answered with a very positive "Yes."

Since then, the Nutrition Committee has studied closely the relationship of good dietary habits to good health. Many Americans know that a higher cholesterol diet might cause a heart attack. But how many parents know that an iron-deficient diet may well cause a child to daydream in the classroom? Iron deficiency can actually cause a child not to pay attention in class, thus seriously affecting his learning ability. We Americans spend more time and money taking care of our automobiles than we do our bodies. And auto safety standards receive far more attention than do "nutritional safety standards."

Recently, the Food and Drug Administration proposed new food labeling regulations, which are voluntary unless a nutritional claim is made by the manufacturer. I strongly support this much-needed and long-overdue requirement.

Furthermore, I have introduced my own bill, the Nutritional Labeling Act of 1973, which would make nutritional food labeling regulations mandatory. While either voluntary or mandatory labeling standards will be a good step forward, no labeling will be effective if

consumers remain ignorant of basic nutritional facts. I am concerned for the people who ask: "What is thiamin?" or "What is niacin?" New food labeling requirements will never work unless the consumers know what the vitamins and minerals on the food label are and how they affect the health of the individual.

Today, we will see how existing nutritional education programs in the classroom are working, or not working. We will look at how many consumers are being reached, who they are, and in general what progress we are making.

I am pleased that we will be able to look closely at elementary and secondary school nutrition programs. To successfully attack our nutritional illiteracy problem, we should, at the very least, make children aware of what is good for them to eat—and particularly, why it is good for them to eat more of certain foods than of other foods.

Furthermore, I am pleased we will also cover the status of nutritional education in medical schools and dental schools. Earlier this year, I introduced the Nutritional Medical Education Act of 1973, S. 324, designed to provide grants for medical and dental schools to teach nutritional education to future doctors and dentists. I strongly feel we must fill this gap in medical education by providing courses in our medical and dental schools which will teach applied nutrition.

Future doctors and dentists are now taking nutrition-related courses, such as pharmacology, biochemistry, and physiology. However, most medical and dental schools do not have courses in applied nutrition. In fact, only five of 105 medical schools do, which deal in a fundamental way with the relationship between good nutrition and good health.

As a result, people turn to food faddists and other often inadequate sources of information, because their own doctors and dentists do not have the educational background to give good advice. Since it has been clearly shown that there is a direct relationship between nutrition and health—between the foods we eat and many diseases such as diabetes and dental cavities—it is vitally important that doctors and dentists be fully trained to recognize and give advice concerning the relationship between diet and health.

We will open today's hearings with the elementary and secondary school side of nutritional education, since two of our witnesses in this area are missing classes to be here this morning, and they are getting very close to final exam time. We have given them a legitimate excuse to play hockey this morning.

During the second half of the hearings, we will discuss nutritional education with representatives of the medical and dental schools from the University of Pittsburgh and Temple University.

We would like to call as our first panel this morning, please come up and be seated on my right if you would, Mrs. Gertrude Marsh, Mrs. Gwen Chegwidde, Cary Murray, and Steve Lympany. Will those witnesses please come up and take your seats on my right, if you would.

All right, I wonder for the reporter of the committee who is taking stenographic notes, if each of you would identify your name and your position or the school that you are from. We will start on that end.

STATEMENTS OF GERTRUDE MARSH, AREA CONSULTANT, DIVISION OF FOOD AND NUTRITION SERVICES, PENNSYLVANIA DEPARTMENT OF EDUCATION; AND GWEN CHEGWIDDEN, DIRECTOR, SCHOOL FOOD SERVICE, FRANKLIN REGIONAL SCHOOL DISTRICT, MURRYSVILLE, PA., ACCOMPANIED BY STEVE LYMPANY, JUNIOR STUDENT, FRANKLIN REGIONAL HIGH SCHOOL; AND CARY MURRAY, SIXTH GRADE STUDENT, SLOAN ELEMENTARY, FRANKLIN REGIONAL SCHOOL DISTRICT, MURRYSVILLE, PA.

Mrs. CHEGWIDDEN. Gwen Chegwidden, Franklin Regional School District in Murrysville.

Miss MURRAY. I am Cary Murray from the sixth grade, Sloan School, Murrysville.

Mrs. MARSH. I am Mrs. Marsh, area consultant, nutrition services, Pennsylvania Department of Education.

Mr. LYMPANY. Steve Lympany, a junior at Franklin Regional High School in Murrysville.

Senator SCHWEIKER. We will begin with Mrs. Marsh with her statement.

Mrs. MARSH. Senator Schweiker, it is a privilege to have the opportunity to present a statement on the need for nutrition education in the elementary and secondary schools.

In my work with child nutrition programs I talk with administrators, teachers, nurses, and food service directors, and I see hundreds of children at lunch almost daily. My area comprises six counties, including the city of Pittsburgh, 99 school districts and approximately 500,000 school children.

Listening to their problems and to their suggestions leads me to the conviction that we must change the image of nutrition education today. The task is to achieve better food use by students. The main objective of nutrition educators must be to motivate each child to feel a deep sense of responsibility for choosing to eat the right food because he is responsible for his own health. It is not effective nutrition education to merely be able to answer with knowledge about nutrients and their functions in the body.

Nutrition education programs in secondary and elementary schools to be effective must concentrate on newer teaching techniques. They must be different from what they have been in the past. They must concentrate on modifying the behavior of the child in selecting and using food. Nutrition educators need to assume the role of change agents as importantly as being "information-givers."

What are some of the poor nutrition practices of students that make us recognize the need for a more relevant approach?

Limited acceptance of a variety of foods, skipping of meals, practice in food fads, persistence in food prejudices, making choices in terms of mass media advertising, the waste of well prepared food in school lunches, and the substitution of snack foods for a balanced diet.

What are some of the difficult choices that students need help in making in terms of nutrition among the proliferation of new products? These are such things as engineered foods, additives, adulterants, convenience foods, preservatives, fortified foods, processed foods.

It has been suggested that I comment on the status of nutrition education programs in Pennsylvania. The efforts appear to be sporadic. There is some outstanding work in certain districts and very little in the majority of places. Home economics education has provided leadership in secondary schools and produced the bulletin "Activating a Nutrition Education Program" followed by "Resources in Nutrition."

Health Education issued a bulletin, "Conceptual Guidelines for Health Programs in Pennsylvania" which touches only briefly on nutrition. Pennsylvania has received a 1-year grant under section 6 of the amended National School Lunch Act to demonstrate the effectiveness of a State level nutrition education specialist. This promises to be of great value.

A MODEL NUTRITION EDUCATION PROGRAM

A model nutrition education program might have these outlines:

(1) Encompass a wide range of target groups including administrators and teachers, children, parents, school food service personnel, school psychologists, and school nurses.

(2) Involve community nutrition agencies and industry groups in a school-community thrust.

(3) Begin nutrition education in kindergarten and extend through high school in a planned sequential program coordinated with related curricula, such as health, but having its stated identified curriculum.

(4) Apply innovative methods and media for presenting nutrition concepts and individualize them to student needs.

(5) Provide leadership through the expertise of a nutrition specialist to develop, coordinate, and evaluate the nutrition programs in schools.

(6) Provide in-service training for administrators, teachers and food service personnel to upgrade the nutritional knowledge and teaching techniques at all levels.

(7) Recognize and use the school food service program as a learning laboratory for developing food habits and attitudes.

(8) Have an ecological approach to nutritional needs and goals.

(9) Consider consumerism in students' potential influence on what the marketplace offers in terms of good nutrition.

(10) Provide for some measurement of objectives such as: Increase in participation in the type-A lunch programs, reduction in plate waste, improved attendance, reduction of illness and accidents to students, increased consumption of foods known to have inadequate intake in the American diet, improved ability to accept learning.

FUNDING FOR NUTRITION EDUCATION

It is assumed that guidelines for funding a nutrition education program are being considered by the Senate Committee. It seems appropriate at this time to give attention to the role of the States' colleges and universities in supplying nutrition education needs for personnel in the secondary and elementary schools.

Pennsylvania is one of the few States having adopted certification requirements for the position of nutrition program specialist. Only Indiana University of Pennsylvania has initiated a nutrition curriculum geared to meet these requirements and to prepare graduates for this position in schools. It would be helpful to have Federal funding to expand this effort here and elsewhere. A grant is needed to write a proposal for nutrition education curriculum at the college level that would serve as a model for all colleges statewide.

In thinking of funding for secondary and elementary programs, it is necessary to take into account that teachers and parents expect to be paid if they are to attend in-service training sessions. It is also important to permit use of funds for mass media communication, radio and television. Funding should provide for nutrition specialists at the local level.

Specifications should have long-range as well as short-range goals and offer the prospect of sustained funding for a reasonable period to achieve positive results. Research and documentation costs need to be considered.

The hows and whys of classroom activities in nutrition will be presented much more charmingly and convincingly by the student here today.

NUTRITIONAL EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS

Senator SCHWEIKER. At this point we will call on Mrs. Chegwidden to proceed with her statement.

Mrs. CHEGWIDDEN. Mr. Schweiker, it really makes me happy to be here today and particularly for you to provide this educational opportunity for these youngsters. I think that it is fine for them to have an experience in a governmental problem.

Senator SCHWEIKER. I might say we are very glad to have them here today. They have certainly been a very good audience, very quiet audience, and I am delighted to have them attending the hearings.

Mrs. CHEGWIDDEN. You asked me to deal with several areas of the problem that we are discussing. One of them was the need for nutrition education in the elementary and secondary schools.

General knowledge through statistics provided from many sources show us that a large percentage of Americans are malnourished. Malnutrition in an affluent Nation is not only a disgrace but fantastically costly in health care. We used to think the poor had a corner on malnutrition but that myth has been exploded. My observation of children has me convinced that the ones from the most affluent homes often have the poorest eating habits.

So, we have a problem.

Senator SCHWEIKER. I think that is a very good point, if I may interrupt. It is interesting because our committee pretty well started out on this, of course, several years ago and we studied the eating habits of the poor and there obviously were some problems.

But then we began to realize that just having money was not the criteria as to how good your eating habits were. We have been conducting a number of hearings like this showing that it is just as bad in terms of middle or upper income brackets because of a lack of knowledge and because of many of the things you have already pointed out in your statements about snack foods and about eating habits.

So you are quite right, and that is one of the reasons that this committee is trying to point its efforts toward setting up a national nutritional policy that will apply to every American regardless of income.

But it is not just a low income problem.

Mrs. CHEGWIDDEN. Right. So that is our problem. And I believe the children need to learn early in life to assume responsibility for their bodies. It seems to me that if they can learn to make wise choices in the area of nutrition that they may be more capable of avoiding other abuses, such as drugs. To reach children early in life, we have to do it in the schools.

PROBLEMS OF INTRODUCING NUTRITION EDUCATION INTO CURRICULUM

I think school administrators feel that feeding children is the responsibility of the parents.

I think the lack of training in the area of nutrition on the part of elementary and secondary teachers keeps them from becoming involved. They also feel that they are expected to add another course and do not seem to realize that just having a positive approach to good nutrition and working it in when the opportunity arises is what is needed.

I had one teacher tell me that when she first heard me talk, she let it go in one ear and out the other. She said at some point she realized that something I had said made sense, and she said, "One day I realized I was a convert."

Food service directors like myself have other problems which restrict their activities in nutrition education. First of all they have to wear two hats. They have to administer a food service program that supplies one-third of a child's food needs at a very low cost. Most school districts are not interested in subsidizing this effort.

The other hat should be an awareness of the need to teach nutrition to students, faculty, administration, and parents. The problem wearing that hat sometimes results from lack of professional status and sometimes from lack of time due to being saddled with the mechanics of a business operation.

Another deterrent can be a lack of resource material. Not that material is not available, but much of it costs money, and it also has to be accumulated.

Mrs. Marsh covered the status of nutrition programs, but I do want to say that I think the lack of nutrition education is not due to a lack of interest on the part of food service directors; it is due to the handicaps that I mentioned in wearing both hats, and in school administrators not thinking that it is that important.

I do not claim to have created a model program for nutrition education in the Franklin Regional School District, but I think it will be interesting for you to know some of the things that can happen to make people more aware of nutrition as it relates to their own best interests.

I would like to comment on the importance of the school lunch as a laboratory for all nutrition education that goes on in the school. To make this laboratory viable for all students, the price of the lunch must be low and a majority of the students must participate. We have a 35-cent lunch in the elementary and 40-cent in the secondary.

Nutrition as an academic subject has never seemed to me to be the answer to poor eating habits. My feeling is that it has to become "a way of life."

The realization that an acceptance of a wide variety of foods being the best insurance of good nutrition has to start early in life.

Teenagers have always been my greatest concern because I know how their bodies are growing and of some of the pressures that exist in their lives.

But I have decided I have to start with younger children—not that I have given up on teenagers, but I have a better chance with them when they have heard the story from kindergarten up.

So I start with kindergarten—a simple story about their body belonging to them—not their mother—and how they should take responsibility for it. We talk about their size and what it may be when they are grown. What foods they need each day to provide that growth.

We then arrange a field trip to the school lunchroom where they are served lunch and are encouraged to try everything. They are told to eat what they think they do not like—I will not let them say they do not like anything—first, while they are hungry—

Senator SCHWEIKER. I would like to bring you to our dinner table some time. It would be very helpful to have you give them a lecture. I have tried to get across the same thing, but I am afraid I do not have the authoritative status you do. [Laughter.]

Mrs. CIEGWIDEN. The next project that works well is talking to their parents. Our district has pretesting sessions to establish readiness for school. It is the only time in a child's school life that you can count on a parent being present for every child. We tell them the type-A story and explain the logic of regular participation in the lunch. We suggest that they not buy a lunch bucket since there is no justifiable reason for a child to bring a lunch from home. I describe the poor lunches I see—potato chips, cakes, nonnutrient beverage—they squirm a bit. I give them a booklet of basic nutrition facts. We have between 85 and 90 percent of our first graders eating the lunch served at school.

STUDENT PARTICIPATION IN NUTRITION AWARENESS

Through the year, I try to reach every student. Before school starts, I talk to new teachers, seventh grade students, and their parents separately at an orientation program.

Early in the school year, I show a movie to all primary children and talk to them. I then do the same for intermediate elementary and junior high students. Good movies are becoming hard to find. This is an area where funding could help.

Each spring I have two student interns from Indiana University of Pennsylvania who have a teaching requirement. They choose the age student with whom they want to work.

We have had many projects to increase nutrition awareness in the school and the community.

We fed white mice—two of them were well fed and two poorly. After 6 weeks, they really showed the difference. We took them to all the schools and kindergartens and talked to the students. To find the mice a home, we had an essay contest on the value of type-A lunch.

We have had many contests: Posters, door and window decorations, lunch bags. We have many field trips and send type-A lunches in bags so we thought it would be fun to have our own bag. We now do.

We have food service representatives in each junior high home room.

We have menus prepared by students for the whole district. And these youngsters who are with us today have most recently developed the menus for the entire school district. And their spokesman, Cary, is going to tell you about it.

I would like to conclude my remarks by saying that my opportunities have been optimized by enlightened school administrators who believe child nutrition is important, and also by a highly competent staff that relieves me of the mechanics of feeding the 3,000 who eat their lunch in our dining rooms.

Senator SCHWEIKER. Both of these statements are very impressive. I don't think I have ever had an opportunity at any of our hearings to have an in-depth detailed curriculum structured in the way that you have.

I think the interesting experiment of the white mice is a natural. I have a daughter who raises gerbils, and I think all children are fascinated by animals at this age, and I think to show them dramatically the difference in eating is unusual.

I wonder if—are you going to touch on that in your explanation about the white mice, or can you tell us about—who can tell us about the white mice?

Mrs. CHREGWINDEN. I think neither of these children can tell you about the white mice.

Senator SCHWEIKER. Would you just elaborate a little bit about how you show this to children?

Mrs. CHREGWINDEN. It was really sort of fun—it has been several years ago. I start one of these projects, and after it is over, I don't continue it. I just sort of have gotten my kick out of that particular project.

But we used glass mayonnaise jars, as a matter of fact; put a little litter in the bottom and had a lid on it with holes in it so they could breathe, and we worked our water tube in through there so that they were visible on all sides at all times, and we kept them in the dining room of the junior high school at that time while they were developing their nutritional deficiencies, and the kids took an interest in it during the time that they were beginning to show.

They were perfectly healthy when we got them, and it is just amazing that within 6 weeks the two just showed what they were eating—their coats got all stringy, you know, and they just really looked sick. The other two looked nice and healthy. And we took them around to all the schools so the children could see them.

Senator SCHWEIKER. That is very interesting because we just a couple of weeks ago had Dr. Cohen, who is probably the leading authority on diabetes, come before our committee. He made a study of the Yemen Jews because those that come from Yemen had no diabetes, and those Yemen Jews who lived in Israel had a lot of diabetes.

In studying their backgrounds, the whole difference was the Yemen Jews from Yemen had never eaten sugar in their diets, and those from Israel had a high sugar diet.

He then took this further and fed rats. He fed a high starch diet to one group of rats and a high sugar diet to the other. One developed diabetes and the others had no diabetes whatsoever.

When you talk about using mice, you are very close to exactly what researchers do when they relate food to health. The very point in mind we are learning more and more how food eating habits relate to health.

We had another doctor, Yetcan, from London, a nutritionist there who relates sugar to heart attacks and heart disease, which is a controversial presumption, but nevertheless a new line of endeavor. That is why nutrition is getting very important here, and you put your finger on it.

STUDENT WITNESSES ON NUTRITION EXPERIMENTATION

We will ask you a question or two if you don't mind, Cary.

Ms. MURRAY. OK.

Senator SCHWEIKER. I understand you and your class prepared school lunch menus for your school. I just want to know how you did this and how you knew what to do. Describe a little bit what you did in this regard, would you?

Ms. MURRAY. Yes. Well, Mrs. Chegwidden came in and she gave us some—she came to the board and she told us what to put into the menu, and we learned in class that we must have a balanced diet every meal, and at lunchtime she told us how much to put, how much meat and how much—how much every food group. And we put it in there, and it was fun to put just so many helpings of meat into every week, every weekday.

Well, we talked about it after she had left, and we decided what to put on the dessert, but made sure that we had—well, we had to make sure that each day we had the right amount of food, of the right food groups in it.

Senator SCHWEIKER. What kinds of things did you look for to have the right amount in? In other words, what were the things that you were looking for to balance in your diet?

Ms. MURRAY. We had to make sure that we had the right amount of meat and right amount—well, we have this book Mrs. Chegwidden gave us. It is called "The Mulligan Stew." And it tells about four, four, three, two, which is four helpings of lettuce—I mean four helpings of vegetables and fruit and four helpings of bread and cereal and three helpings of meat—no, three helpings of milk and cereal group and two helpings of meat.

We had to make sure that we had the right amount for lunchtime, and we just assumed that at dinnertime and breakfast, you get the right amount for each of the others.

Senator SCHWEIKER. Carey, how old are you?

Ms. MURRAY. Twelve.

Senator SCHWEIKER. You are certainly a very articulate witness. You really do very well; very, very good.

Ms. MURRAY. Thanks.

Senator SCHWEIKER. A lot of the older folks get nervous, but it doesn't seem to bother you one bit, does it?

Cary, how about when you go home and eat around the house, do you try to remember some of those ratios and things, or do you slip a little when you are home?

Ms. MURRAY. When it is snacktime after school, I sometimes want a candy bar instead of an apple.

Senator SCHWEIKER. OK. You slip once in a while, then; right?

Ms. MURRAY. Right.

Senator SCHWEIKER. Well, that is the trouble with our society. I slip, too. I have a little hard time turning down that dessert once in a while.

At least we know what we ought and ought not to do, and we try. I think that is important.

You sort of feel a little guilty now when you take that snack now, don't you?

Ms. MURRAY. Yes.

Senator SCHWEIKER. You feel like you are cheating a little bit, don't you?

Ms. MURRAY. Yes.

Senator SCHWEIKER. Well, that is good. I think that is exactly what nutritional education ought to do. We know we have to sort of pay a penalty when we violate our nutritional rules, just like any others.

Steve, I would like to turn to you for a minute. You are a high school junior?

Mr. LYMPANY. Yes.

Senator SCHWEIKER. Is that right? And I wonder if you would tell us a little bit about your opinion on nutrition education and what the problem is or is not with students in your grade levels, about nutrition, and how seriously they take nutrition and how much nutrition, if any, they have had.

Mr. LYMPANY. Well, I could start off by relating about my experience of how I was introduced to the importance of nutrition.

I really got into it about 2½ years ago when I was playing basketball for our junior high school team. About a quarter through the season I found myself feeling weak and I really didn't know what to attribute that to. Mrs. Chegwiddden talked to us one day after an assembly and told us about nutrition.

I didn't understand everything that was going on at the time, but she did tell us that nutrition does help your body. So I decided to give it a try and starting eating some more substantial foods than I usually ate.

Unfortunately it didn't help my playing ability in basketball. [Laughter.]

But I did feel much stronger and was able to concentrate more in the classroom, so it did help me there.

But I think one of the problems in the schools with the students is that they need something tangible like I had to see the results of the nutrition.

Now, you could tell people that nutrition is going to help them, but they need something to touch and to feel, that they can see that it is helping them in some aspect.

Senator SCHWEIKER. In other words, they need a direct practical relationship to really have it make an important impression on them?

Mr. LYMPANY. Yes.

Senator SCHWEIKER. Do you think that most of your teenage friends are pretty much set in their ways about eating habits by the time they reach your grade level? In other words, have they pretty well established a pattern of eating that is a little hard to change at that age level or not?

Mr. LYMPANY. I would say maybe for this age level they are on that they have habits and they will eat like this on their age level, but as they get older they will realize they will have to change their eating habits, but you know like as a junior or senior, at our age, they do have habits and eat what they want to eat. They will come home and have a specific snack that they always have that maybe isn't good for them, so they are pretty well set.

But I think if you do work younger or in the same respect, like what I had, if they can be shown something, then they could change their habits easily.

Senator SCHWEIKER. Have you ever gotten a comprehensive course in nutrition anywhere along the school path or not?

Mr. LYMPANY. I would say sixth grade, through the health courses. We had a definite health course in sixth grade and last year, my sophomore year, we did have health courses and there was a pretty deep nutritional—

Senator SCHWEIKER. Did it relate specifically to the applied nutrition aspect like eating, like snacks, like balanced meals, that kind of thing, or not? Did it get into specifics of what to do and what not to do in terms of good eating habits?

Mr. LYMPANY. Well, it didn't like mention snacks, but it did say you do need this vitamin or mineral and where to look for it and how much that you should get of it, and it did give the kids, people, an idea of what they should eat.

Not that the people did do it, did eat what they were supposed to eat, but it did give them a little bit of a realization of what they were supposed to have.

Senator SCHWEIKER. And this was what, a health course you say last year or what?

Mr. LYMPANY. Yes, it was a health course, part of the phys-ed structure.

Senator SCHWEIKER. Part of your phys-ed program. Did you have the health course, for how long a period of time, not the whole year or a portion of the year or just certain periods?

Mr. LYMPANY. It was three periods a week for the whole year.

Senator SCHWEIKER. On health?

Mr. LYMPANY. On health, yes.

Senator SCHWEIKER. That wasn't part of phys-ed training, I mean you had another separate phys-ed period; is that it?

Mr. LYMPANY. Right. We usually had a period 5 days a week, three periods were the health and the other two were the phys-ed.

Senator SCHWEIKER. All right, Steve, is there anything else you would like to say about nutrition or any of your experience in school at all, or does that cover it?

Mr. LYMPANY. I think it pretty well covers it. I just hope that through this that we can get to people and they can benefit as much as I did.

Senator SCHWEIKER. Cary, do you have anything else that you would like to tell us that I didn't ask you that you think is important or anything I missed?

Ms. MURRAY. Well, Mrs. Chegwidden brought us three books and one of them was "The Vitamin Mystery," and it was a really good book and it talked about some—talked about some incidences happened—that happened to people and how they overcame them with vitamins, and they had some stories, about 15, and they were really nice and kept the interest of all students.

Mrs. CHEGWIDDEN. I would like to comment that Cary is physically fit by the President's physical fitness test, saw her picture in the paper on Wednesday.

Senator SCHWEIKER. She has a certificate? She looks physically fit to me, too, Cary.

Ms. MURRAY. Thank you.

Senator SCHWEIKER. I congratulate you.

I know I have five children and a couple of them got physical fitness awards and are very proud of them, so I think you should be very proud of yours, too.

INDIFFERENCE IN SCHOOL ADMINISTRATORS

Mrs. Chegwidden, I would like to ask you a few questions. One of the problems seems to be not necessarily in Pennsylvania, but nationally as well, is the indifference of some school administrators. Why do you think there is this indifference and what might we do to overcome it?

Again, I am not talking of your particular setup because obviously you wouldn't be doing what you are doing if they were that indifferent, but I think generally we face this problem.

I would like to have your comments and suggestions on it.

Mrs. CHEGWIDDEN. I want you to understand that I have an unusual administration in my school district. They really believe in the school lunch as a laboratory for good nutrition and the educational value of it in the whole school program, and I think there are very few school administrators who see it in that light.

Senator SCHWEIKER. I certainly agree with that.

Mrs. CHEGWIDDEN. And that is where I think a change has to come.

Senator SCHWEIKER. Why do the school administrators not see it in that light? Why aren't they as enlightened, say, as whom you are working with? What is the difference here? What is the problem, do you think?

Mrs. CHEGWIDDEN. I think they take the attitude the parents should handle the problem of feeding children.

There is also some difficulty with priorities. Most districts think nothing of subsidizing athletics but want no part of nutrition education. I think the two are closely related and nutrition education can benefit a larger number of students.

Some of the most highly qualified directors I know can't get into a classroom and continually are threatened by the school board concerning closing down the program or going to a management company for administration of it.

Sometimes it's a case of a school board not having looked at it conceptually. When they do they change their attitudes. This doesn't happen often but I have seen it happen.

Senator SCHWEIKER. Now what would you say again, I am not talking about your case particularly because I think you are in a very unique and highly commendable position in terms of the nutritional environment, but what do you say about the question of, of our generally elementary and secondary schoolteachers being given nutrition knowledge to pass on to their children in terms of schoolroom lessons? What is your response to that in general?

Mrs. CHEGWIDDEN. I think that teacher training schools should require a nutrition course just from the standpoint of the awareness of the individual, because those teachers have grown up in an environment of very little nutrition awareness. And they just don't have it when they get to the classroom. They have other things that they are interested in, and they just don't realize that just by taking a stance in favor of good nutrition, that they can have an effect on the children.

Senator SCHWEIKER. Have you developed or worked with any ways to reach into the homes of the area? In other words, you obviously can get a message across at school. What ways have you developed in your technique or approach to try to get the message to the homes in terms of the parents or to have their children back home in terms of carrying over to the other meals and other eating habits?

Mrs. CHEGWIDDEN. Our parents know they are always welcome in our lunch rooms. We send a lot of messages out, and we are fortunate in having a little local newspaper that reaches I think they say around 70 percent of the taxpayers in our school district. And it's small and intimate so most people read most everything that is in it. And I can get anything I want printed in that newspaper at any time.

SOURCES OF NUTRITION EDUCATION

Senator SCHWEIKER. I better learn that technique. [Laughter.]

OK, that is pretty good. How about the materials and some of the informational aids, structural aids you use, where do you get it, does anybody help you with it, do you work it up yourself or what sources of nutritional education, information, and instruction are available?

Mrs. CHEGWIDDEN. I have gotten a great deal of information from the National Dairy Council. They are very cooperative and it doesn't cost anything, and I can get large quantities to supply rooms with material, teaching material. And over a period of years I have accumulated other bits of information from other places. The Citrus Commission and many of the food processing companies supply materials. The American School Food Service Association has materials to buy.

Senator SCHWEIKER. Does—is there any material that you can avail yourself of in the USDA or not?

Mrs. CHEGWIDDEN. Yes, I am sorry I forgot to mention that. But it costs money. They have a couple of things that I really would like to use, but they are 20 cents a copy, and when you are talking about 1,700 children or something like that, it runs into many dollars. They have a little activity book and a coloring book that are very good.

Senator SCHWEIKER. So the price factor is a practical limitation in terms of USDA material.

Mrs. CHEGWIDDEN. Yes, it is.

Senator SCHWEIKER. Good point.

Mrs. CHEGWIDDEN. I have written specifically asking for a quantity discount, you know, and there isn't one.

Senator SCHWEIKER. I think that is a very good suggestion. We will look into that aspect of it.

LACK OF STATE REVENUE FOR NUTRITION EDUCATION

All right, Mrs. Marsh, I would like to ask you a few questions if I may. Do you have any idea of how much the State of Pennsylvania spends on nutrition education annually? I don't know if you have these figures available to you or not.

Mrs. MARSH. Do you mean through the State department of education?

Senator SCHWEIKER. Through anyway that you can earmark it. Now I realize that this is an area where it's tough to categorize and earmark things. Is there any handle or measurement, and you probably don't have it with you today but maybe you can supply it for the record. Any earmarking of what the State might be spending in this area, if that is possible, I don't know, I am really asking.

Mrs. MARSH. I do not know of such information just now. As far as I know there is nothing specifically spent for nutrition education.

Senator SCHWEIKER. How about, your area is what, 6 counties, 99 school districts, 500,000 children, is that right?

Mrs. MARSH. Yes.

Senator SCHWEIKER. How many of these children would you say get some regular exposure to formal nutrition-educational activities, would you have any guesstimate?

Mrs. MARSH. Possibly what you have heard the students say today would be a good—would be the optimum they would receive. This appears at such spotty places in the curriculum and depends so much on the particular interest and talent that is available in the local district.

Senator SCHWEIKER. You make a point in your statement which I think is a good one, that nutritional education should inform but it should also motivate. I think Steve also touched on this motivational aspect. Do you have any suggestions or ideas or are you aware of any program that might be used in terms of motivating young people, specifically and maybe this is not an easy thing to do, I just raise the question as to whether you have any suggestions.

Mrs. MARSH. New approaches are necessary to motivate. The more materials, the more avenues of approach, the more resources available financially, the more that can be done. Most of us know what needs to be done and what we would like to do, but we do not, as Mrs. Chegwidden has pointed out, have the resources available sometimes to do what we know needs to be done. We need to reach the community most of all.

COMPETITIVE FOODS IN SCHOOLS

Senator SCHWEIKER. Now one of the areas that we in Congress have not done as well as I think we should have, and obviously it affects

your area, too, is the matter of vending machines and what kind of snacks and what kinds of foods are available to schools through vending machines, that is, sweet cakes and soft drinks and things such as this. I wonder what your view is in this general area and whether you have any comments on this problem?

Mrs. MARSH. We know that students will spend their money for other things than the type A lunch, when other things are available. And we have instances where there had occurred a vending machine with these snack items that you have in mind. When that vending was limited or set at another time than the lunch time, the type A lunch participation increased. And conversely when they are available it decreases.

We have—we are very fortunate in Pennsylvania so far to have what we call the competitive food regulations that Pennsylvania itself applies.

Senator SCHWEIKER. Explain that for the committee record if you would, what do you mean by that?

Mrs. MARSH. This is the regulation that had been in the amended Child Nutrition Act which prohibits or limits the sale of competitive foods to 1 hour before the lunch period and until after the lunch period. Now, of course, we have always approved vending of milk and ice cream because they are nutritious foods that are served as part of the type A meal. Also the original specifications in the Child Nutrition Act is that such foods should be foods that can be served, are approved foods to be served on the type A lunch.

Senator SCHWEIKER. I wonder if you would define type A lunch because I think we have used a lot of terms there we ought to define.

Mrs. MARSH. The type A lunch consists, the meal pattern for the type A lunch consists of 2 ounces, a minimum of 2 ounces (edible portion as served) of lean meat, poultry, fish or meat alternates. Three quarters of a cup of fruit and/or vegetable in two or more menu items. A serving of enriched bread (1 slice), a teaspoon of butter or fortified margarine and a half pint of whole fluid milk.

Senator SCHWEIKER. The question comes up is whether—and the Congress itself has been in this area—whether we should prohibit as you mentioned an hour before, to the close of the lunch hour some of these vending machines availabilities or whether we should motivate young people to make wise decisions or do both. I gather from what you are saying that you lean in the direction of both.

Mrs. MARSH. Both.

Senator SCHWEIKER. Of eliminating the opportunity during a lunch hour and also motivating them to pick the right choices, is that correct?

Mrs. MARSH. Yes, I would say that is correct.

FOOD ADVERTISING

Senator SCHWEIKER. Now our committee has also been investigating food advertising on children's television. And one of the disturbing trends in this area, of course, is all the sweet breakfast cereals that you are now getting. One of the provable facts in this area and this is not conjecture, we know this from our dental studies, is that one of the reasons our children have an epidemic of cavities today is the sugar snacks and sugar concentrations that they eat which causes this.

Now one of the arguments then is should we be promoting and advertising a presweetened cereal over television? Are we creating more of an epidemic of tooth decay by promoting presweetened cereals? There are some real experts who think that we are, and that this in itself is not good nutrition, not a good nutritional policy. I wonder if you would comment in general on this problem, particularly what you think the impact of television advertising is on the children's eating habits, and how can we use television as a positive educational force in nutritional policies?

Mrs. MARSH. I think it has great influence on the eating habits and that is the reason that I mentioned that we in schools should employ mass media in order to get our message across. The message of good nutrition.

Senator SCHWEIKER. One of the companies, one of the food companies did begin a series of Saturday morning television ads designed and oriented toward nutrition education. I commend them for it. I think that is the kind of food advertising we ought to be encouraging, because I have a few that get glued to that Saturday morning hour, as much as I try to turn off the set. And there is no question in my mind that you really determine a lot of habits there. I have seen the effect going into a supermarket and see our little 3-year-old insist that she has to have something off the shelf that she saw on television.

No relationship at all to nutrition or need but just the mechanics of pure advertising. It's a powerful tool and I think we have to view that in light of nutritional policy that builds up the health of the Nation rather than destroys it. I think you made one very interesting point, that only Indiana University of Pennsylvania has a curriculum designed to prepare men and women for the position of nutrition program specialist, is that correct?

Mrs. Marsh. Yes.

Senator SCHWEIKER. I commend Indiana and I think it also points out the inadequacy and neglect and waste of many of our other institutional training programs across the State that really don't directly relate to the health needs of our State and country today. I want to make it very clear again that Pennsylvania is not unique in this area, we are probably unique that Indiana has such a course and I think that is very good. I want to thank you all very much for being with us here this morning and we appreciate your comments. I again want to commend your efforts. I think you folks serve as a model of what can be done and ought to be done in this area. Tragically, it's a very unique model I might say, as you suggested yourselves, in terms of what we are doing. So I think you stand out as a shining light in a very dark wooded area of what has to be done in this field. But we appreciate you all for being here today and thank you for the very fine contribution you are making.

Mrs. CHIEGWIDDEN. Thank you.

Mrs. MARSH. Thank you. [Applause.]

Senator SCHWEIKER. Next we are going to hear from Indiana University of Pennsylvania and their curriculum that I just referred to, so we will ask Mrs. Kathleen D. Schaum and Miss Janice Gray to please come forward and take seats at our witness table.

Mrs. Schaum is a registered dietitian, assistant professor of nutrition at Indiana University of Pennsylvania. Miss Gray is a sophomore in food and nutrition at Indiana University of Pennsylvania.

Mrs. Schaum, we welcome you and Janice here today and ask you to begin if you would, with your statement.

STATEMENTS OF KATHLEEN D. SCHAUM, REGISTERED DIETITIAN, ASSISTANT PROFESSOR OF NUTRITION, INDIANA UNIVERSITY OF PENNSYLVANIA; AND JANICE GRAY, SOPHOMORE FOOD AND NUTRITION MAJOR, INDIANA UNIVERSITY OF PENNSYLVANIA

INCORPORATING NUTRITION EDUCATION IN SCHOOL CURRICULUM

Mrs. SCHAUM, Senator, I would like to let Janice speak for us first. I think it is always interesting to let the student have the first say because it shows what the student is learning in a nutrition education program.

Senator SCHWEIKER. That is a very commendable attitude, a little different from when I went to school, but I am all for it and go ahead. [Laughter.]

Miss GRAY. We believe that it is necessary that young people learn to eat nutritious food and why such food is essential, for it is as children that they set their eating patterns which will be carried with them throughout their lives.

Many Americans believe our children are adequately nourished but the Ten-State Nutrition Survey and many similar surveys have proved this to be a false belief.

In order to prevent nutritional deficiencies, we must begin teaching nutrition in our schools. The Federal and State governments have spent much money conducting the 10-State nutrition survey, sponsoring the school lunch program, passing nutrient labeling laws, and beginning the breakfast program.

Now, unless we educate our youth to the purpose of these programs and how to use them, we may as well halt all our innovations in nutrition education programs. It will be difficult to convince a 50-year-old housewife that she should choose a certain brand of orange juice that provides the most ascorbic acid which can be determined by reading the nutrient labels, which will come out in December. The housewife will already have a certain brand of orange juice which she likes and which fits into her budget.

A child, however, can be trained to read these new labels if we start nutrition education in the first grade or even in kindergarten—before his food habits are firmly established.

There are very few ongoing nutrition education programs in the Pennsylvania schools. If nutrition is taught at all, it is lightly touched in health or home economic classes. Presently, very few college curriculums require health education majors to study nutrition. The home economics majors usually take only one basic course in nutrition.

The only college curriculums which offer extensive nutrition education are the ones training dietitians and nutrition program specialists. These people should be managing our school lunch programs and coordinating the teaching of nutrition in our school systems.

Dietitians and nutrition service specialists can help make the school lunch program and breakfast programs more than just a "school time thing." They can launch full-fledged programs to incorporate nutrition into all subject areas.

Now, at this time I want to explain a couple of the subject areas in which nutrition education can be incorporated, so I will have to depart from what I have already written in my statement.

First of all, in English classes we feel that an exercise in poetry or composition writing will provide students with an opportunity to become aware and express their ideas of which foods are good for them.

In art class, creativity can be developed and expressed via nutrition posters and paintings. We feel that National Nutrition Week would be a really good opportunity for the students to use or express their art abilities by providing contests where they would make up slogans and draw pictures to go along with the slogans.

Home economics or health classes: Students can learn and can study how good nutrition affects their looks, happiness, and friendship. We find that it is just a natural occurrence that with each increasing year, good looks, happiness, and friends become more important to students. And this in itself is a great help in studying nutrition and how it will affect their looks and so forth.

Also, the menu planning as was mentioned in the Franklin area schools is a very good opportunity for students to learn what goes into a particular school lunch. They can learn about the budget, as well as the most important thing, which is learning about the nutritional value of the foods they are eating.

Another way that we found that you could make the students aware of the nutritional value of foods is by using color coding. The way this works is that you would have different posters, maybe for the basic four food groups. And then have pictures of each food group on each particular poster. If you put it in a strategic place, then the students would constantly be bombarded with nutrition and how different foods fit into the basic four food groups.

Another area is photography. You could use slide-tape presentations or even movie productions which can be written, directed and acted by the children.

We also found that you can make up songs to very well-known slogans, or very well-known tunes. Nutrition crossword puzzles challenge the students to pick out the particular foods which are good for them.

Also, we have constructed in our school, which we have already presented at the Pennsylvania School Food Service Association, somewhere else something called the "tower of strength." The students would keep a 1-day diet history. This would force the children to record everything that they eat for the entire day: Meals, snack, anything that they have consumed during that particular day. The tower of strength is built upon the basic four food groups. There are four holes for the bread and cereal group, four holes for the food and vegetable group, three holes for the milk and the dairy products, and two holes for the meat group. As the student writes down everything that he has eaten, he will fill the holes in the tower of strength. If he does not eat all of the foods required in the meat groups, then there will be a hole in his diet and thus in his tower of strength. This is a practical application of nutrition education.

Senator SCHWEIKER. Who does this, you say?

Miss GRAY. Well, the students can construct this and they can also take their own diet history.

Senator SCHWEIKER. What results have you had from the students that have tried this, what reactions?

Miss GRAY. Well, we cannot give you any results at this time. We merely constructed it as a possibility.

Senator SCHWEIKER. I think it is a very intriguing idea and I would like, maybe I think you ought to follow up with a little experiment to see some of the reactions you get. I would hate to take my own profile on certain days, so I think it would be a very good eye-opener.

Miss GRAY. In my nutrition class in college, we did take a 3-day diet history. We did not use the tower of strength, that is, definitely for elementary—

Senator SCHWEIKER. What did you find from that?

Miss GRAY. I found that I was deficient in several things. Almost everyone found they were deficient in something.

Senator SCHWEIKER. What was your problem, can you tell us? In other words, what—

Miss GRAY. I was deficient in iron as you mentioned before. And some students were deficient in things like ascorbic acid.

Senator SCHWEIKER. Were you heavy on sweets or not?

Miss GRAY. Not particularly.

Senator SCHWEIKER. That is my weakness, I suppose.

Go ahead.

Miss GRAY. But I thought that this was a really good experience for me. My eyes were really opened about the quality of the foods I had been eating.

If students learn proper eating habits at a young age, then they will be carrying it with them throughout the rest of their lives and will not have to start in college as I have. Many students are in the same boat as I am.

The next subject area that we are thinking of is the history class. Now, if you have access to a kitchen, we feel that the students could plan, prepare and serve meals, for example, of the pioneer days. Maybe they could get dandelion greens and so forth and serve them. It could be done, not only for foods eaten in pioneer days, but could be done for maybe the foods of Japan. If you are studying about Japan and Japanese culture, let the children prepare foods from Japan.

We feel again that actual participation will teach the student how much effort goes into a well-planned and prepared meal such as the school lunch.

Geography class is another area. Students can taste foods from different countries and of different ethnic groups by using a taste panel. The Chinese culture establishes a very good area where you could apply the taste panel. The students will learn how common foods such as pork, rice, and vegetables, foods that are very common to people in the United States, can be eaten in a different and unique way.

Also in science class, labs and experiments can be valuable teaching aids again, and I would like to refer to what Mrs. Chegvidden said about the rat experiment. I saw pictures of the experiment in a master's thesis. Someone had actually conducted this nutrition experiment. If students could do experiments like that, it would be an excellent opportunity to find out the effects of a deficient diet.

Also, just growing vegetables will acquaint students with nourishing foods. Students could have a biology type experiment, even on the elementary level, in which they grow their vegetables and possibly eat them, if they grow well.

Senator SCHWEIKER. For the price of food, we all better be growing vegetables. [Laughter.]

Miss GRAY. The more avenues of approach, the more motivated the students will be to broaden their total learning experience in the nutrition area. Many school lunch program managers are not qualified or educated for coordinating these programs, let alone teaching them. These are the lay managers, who are the wives of prominent townsmen, or who have been promoted from dishwasher to cook to manager.

The advent of catered school lunch programs often brings with it a business manager who is interested in profitmaking and knows little or cares little about nutrition. We must be careful to allocate money for nutrition education to schools who have qualified nutrition experts, not uneducated or administrative managers.

If the school does not provide or have one or more qualified dietitians, the nutrition education money should first be spent to obtain such professionals.

I would like to turn it over to Mrs. Schaum.

Senator SCHWEIKER. All right. Go right ahead, Mrs. Schaum.

Mrs. SCHAUM. This idea of including nutrition education into other course curriculums is idealistic because each teacher has a certain amount of material he must cover in a minimum amount of time. Therefore, I believe that we should only try to incorporate nutrition education into all subject areas in the elementary schools where the classrooms are autonomous. The nutrition education coordinator can sell the idea of including nutrition into several subjects where one teacher teaches in a self-contained classroom. She can do this easier than trying to have teachers of all different areas in the secondary school include nutrition education, because everyone thinks that their course is most important.

I am proposing something new today. The students in the nutrition classes at Indiana University of Pennsylvania have suggested that all college students be given the option of taking health or nutrition. This idea, I believe should be carried out in the secondary schools. A registered dietitian or a qualified nutrition program specialist should teach at least one nutrition course in junior high and one nutrition course in senior high school. Those courses should be taught after the students have studied biology in junior high and chemistry in high school.

The first problem in this type of program is to sell nutrition education to the faculty and administration.

The second problem is to educate the elementary teachers who will be including nutrition in their classes.

I would like to pause there and say that we offer nutrition education to the elementary teachers at Indiana University of Pennsylvania, and very few teachers of elementary students take this course. They don't think it is important enough to take it, so we have to start a little higher up. Maybe we need to require this of these elementary teachers.

A third problem is to obtain adequate nutrition teaching aids. As was mentioned, the National Dairy Council, local home economics

extension agencies, utility companies, community leaders and other professionals can frequently provide teaching aids. Some are free and some we have to pay for. Teaching aids can also be made by the students and/or the teachers.

An example of this is the tower of strength Janice mentioned. It was designed especially for elementary nutrition classes and I think it will work. It is very visual. If individual teachers are skeptical of their abilities to incorporate nutrition into their curriculums, they could try teaching or invite some qualified speakers, including the nutrition service specialist or the dietitian in their schools.

MODEL PROGRAMS FOR ELEMENTARY SCHOOLS

You asked me for a model elementary nutrition education program. One was described in the spring issue of Nutrition News. This program was developed by the Ohio State University Extension Service.

Another model was discussed in the April 1973 issue of Nutrition News. This model was developed by Towson State College in Baltimore, Md. These models can serve as guides for including nutrition education into the elementary schools. However, I do not feel that models are essential if the nutrition education coordinator is a trained dietitian or nutrition service specialist. These people are professionals. They are creative and they have many ideas to share. What they need is recognition of their knowledge, the go light to incorporate nutrition education into the education of all levels, and some money to implement their programs.

I suggest we allocate money to hire one or more qualified registered dietitians or nutrition service specialists to head the school lunch programs and to coordinate the nutrition education programs and to purchase some equipment and materials to carry out the programs.

I would like to add something to my statement. That is about my experience with college students. I have taught nutrition for two semesters at Indiana University of Pennsylvania. I have seen about 300 students pass by my nose, and it was amazing what the students did not know about nutrition when they came.

The first thing we do is one of those diet histories. They take a record of what they eat for 3 days, and for 3 days they yell and gripe and say Mrs. Schaum is a mean teacher, et cetera, and I make them work too hard. But when they do this, at the end of the 3 days they realize that they didn't have to work too hard for the 3 days because they didn't eat very well. They really didn't eat very much and what they ate was junk type foods. And they usually say when you ask them at the end of the course, "Mrs. Schaum, that diet history wasn't all that bad. It helped me so that I would listen for the rest of the time."

I am concerned because these students think when they come to nutrition class that they know what to eat. And this is the first course that they get in nutrition, because they have already developed their eating habits. I think we need to include this nutrition education at a lower level. We need to start teaching these students before they get to my class. I need to teach them more about nutrition at the cellular level, how nutrients work in the body, how we can speak to physicians on their level about providing adequate nutrition in the diseased

state. These students can pick up all the basic facts about nutrition from the time they are little ones.

I am concerned about the nutrient labeling law. My students never knew about reading a label. These students don't read labels, they buy the cheapest foods for the least money. They buy margarine, 6 pounds for the dollar; it doesn't matter that it has more saturated fats than butter. It does matter that they can afford it.

At the end of a nutrition class, they know how to read labels. I don't guarantee they all do read them, but at least they know how. One student said to me after the final exam on Monday:

Mrs. Schaum, you know, every time I go into our school cafeteria line, everybody around me knows that I took nutrition because I am sitting there saying, "Oh, fruit, no, can't have this; that's not fruit; it is a dessert. Can't have pie."

She has a whole group of her friends thinking she is kind of hypochondriac against foods. I didn't really mean to instill this in the student except that once they get educated in nutrition, they do know it doesn't guarantee they eat correctly, but they are at least aware. And I think this is very, very important.

[The complete statement of Mrs. Kathleen Schaum follows:]

I. NEED FOR NUTRITION EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS

It is necessary that young people learn to eat nutritious food and why such food is essential. For it is as children that they set their eating patterns which are carried with them throughout life. Many Americans believe that our children are adequately nourished, but the Ten-State Nutrition Survey and many similar surveys have proved this to be a false belief. In order to prevent nutritional deficiencies, we must begin teaching nutrition in our schools.

The federal and state governments have spent much money conducting the Ten-State Nutrition Survey, sponsoring the school lunch program, passing the nutrient labeling laws, and beginning the breakfast program. Unless we educate our youth to the purpose of these programs and how to use them, we may as well halt all our innovations in nutrition programs. It will be difficult to convince a 50-year-old housewife that she should choose a brand of orange juice which provides the most ascorbic acid which can be determined by reading the new labels in December. That housewife will already have a certain brand of juice which she likes and which fits into her food budget. A child, however, can be trained to read those new labels if we start in the first grade or even kindergarten before his food habits are firmly established.

II. STATUS OF PROGRAMS TODAY IN PENNSYLVANIA

There are very few ongoing nutrition education programs in the Pennsylvania schools. If nutrition is taught at all, it is lightly touched in health or home economics classes. Presently, very few college curriculums require health education majors to study nutrition. The home economics majors usually only take one basic course in nutrition. The only college curriculums which offer extensive nutrition education are the ones training dietitians and nutrition service specialists. These people should be managing our school lunch programs and coordinating the teaching of nutrition in our school systems. Dietitians and nutrition service specialists can help make the school lunch program and breakfast programs more than just a "school-time thing." They can launch full fledged programs to incorporate nutrition into all subject areas. Some examples of this are:

(1) English class-exercise in poetry or composition writing will provide students with an opportunity to become aware and to express their ideas of which foods are good for them.

(2) Art class-creativity can be expressed via nutrition posters and paintings.

(3) Home economics or health classes—students can study how good nutrition affects looks, happiness, and friendship.

(4) Photography class—slide/tape presentations or movie productions can be written, directed, and acted by children.

(5) History class—if access to a kitchen, the students can plan, prepare and serve meals of the pioneer days. Actual participation will teach the student how much effort goes into a well planned and prepared meal such as the school lunch.

(6) Geography class—students can taste food from different countries and of different ethnic groups.

Many school lunch program managers are not qualified or educated for coordinating such programs, let alone to teach in them. These are the lay managers who are wives of prominent townspeople or who have been promoted from dishwasher to cook to manager. The advent of catered school lunch programs often brings with it a business manager who is interested in profit-making and knows little about nutrition. We must be careful to allocate money for nutrition education to schools who have qualified nutrition experts, not uneducated or administrative managers. If the school does not have one or more qualified dietitians or nutrition service specialists, the nutrition education money should be first spent to obtain such professionals.

III. PROBLEMS OF INTRODUCING NUTRITION EDUCATION IN THE CURRICULUM

The inclusion of nutrition education into other course curriculums is idealistic because each teacher has a certain amount of material that he must cover in a minimum amount of time. Therefore, I believe that we should only try to incorporate nutrition education into all subject areas in the elementary schools where the classrooms are autonomous. The nutrition education coordinator can sell the idea of including nutrition into several subjects to one teacher who teaches in a self-contained classroom easier than to teachers of specialized areas in secondary schools.

The students in nutrition classes at Indiana University of Pennsylvania have suggested that all college students be given the option of taking health or nutrition. This idea, I believe should be carried out in the secondary schools. A registered dietitian or a qualified nutrition service specialist should teach at least one nutrition course in junior high and one nutrition course in senior high schools. Those courses should be taught after the students have studied biology in junior high and chemistry in high school.

The first problem in this type of program is to sell nutrition education to the faculty and administration. The second problem is to educate the elementary teachers who will be including nutrition in their classes. A third problem is to obtain adequate nutrition teaching aids. The National Dairy Council, local home economics extension agencies, utility companies, community leaders, and other professionals can frequently provide teaching aids—some free and some for a fee. Teaching aids can also be made by the students and/or the teachers. An example is the tower of strength designed for use in elementary nutrition classes. If individual teachers are skeptical of their abilities to incorporate nutrition into their curriculum, they could try team teaching or invite some qualified speakers, including the nutrition service specialist or dietitian in their schools.

IV. OUTLINES OF A MODEL NUTRITION EDUCATION PROGRAM

A model elementary nutrition education program was described in a spring issue of *Nutrition News*. This program was developed by The Ohio State University extension service. Another model was discussed in the April 1973 issue of *Nutrition News*. This model was developed by Towson State College in Baltimore, Maryland.

These models can serve as guides for including nutrition education into the elementary schools. However, I do not feel that models are essential if the nutrition education coordinator as a trained dietitian or nutrition service specialist. These professionals are creative and have many ideas to share. What they need is recognition of their knowledge, the "go" light to incorporate nutrition education into the education of all age levels, and some money to implement their programs. I suggest you allocate money to hire one or more qualified registered dietitians or nutrition service specialists to head the school lunch programs and to coordinate the nutrition education programs, and to purchase some equipment and materials to carry out the programs.

ADDITUDINAL PROBLEMS

Senator SCHWEIKER. Well, I think it was a very good statement. And one fact surprised me. I believe Janice mentioned home economic majors usually only take one basic course in nutrition.

Miss GRAY. That is right.

Senator SCHWEIKER. Which I would have assumed would not have been the case because they are home economics majors which I think is sort of a sad commentary on the whole concept.

Mrs. SCHAUM. I think the nutrition education for the home economics student is on a very limited basis also, because most students, as we were discussing this morning, who major in home economics instead of in dietetics or nutrition education do so because they are interested in clothing, and in child care. They have to take one course in nutrition in their curriculum. I can usually find the dividing line between the C and above-average students—dietitians and nutrition students—and C and below-average students—home economics majors. This shows interest, not whether or not they can pass nutrition. The students in home economics also don't want to know about nutrition because they don't know enough about it and they don't think it is important.

Home economics students think nutrition is a pain. It is one of these courses they have to take like letter writing II, or something.

Senator SCHWEIKER. Also I think your observation that unfortunately many of our catered lunch school programs, the business manager's only motivation really is the profits aspects of it. And I think this can or cannot relate to nutrition depending on the wisdom of the person making that decision.

And if it is strictly ignored, it can be very disastrous, I think that is a good point. I also believe that your idea of giving people the option of taking health and nutrition at college and then the idea of taking a similar course in junior and senior high schools are good.

I think you have come up with some very good specific suggestions. I would like to ask either one of you, whoever wants to answer this question, what do you think explains the lack of attention to nutrition in our elementary and secondary curricula?

At Pennsylvania and elsewhere, why do we have the attitude about nutrition that we do have today? Not only in education but just the general thing that you mentioned about coming into your class with the students?

Mrs. SCHAUM. I think the lack of interest in nutrition in our schools comes because we were not trained. I don't know if you remember what nutrition education you had in school?

Senator SCHWEIKER. I had virtually zero.

Mrs. SCHAUM. Right and so you are our teachers and you are teaching our students. And if you haven't had the interest, and the exposure, then you will not instill this in your students. And I think this is one of our big problems. Plus the fact that there are not as many dietitians and nutrition service specialists as there need to be.

Therefore, we spend much time teaching in the schools, working in hospitals, working in the school lunch programs, and we do not write. Whereas people like Dr. Atkins and Adele Davis—people who are interested in making a dollar—take the time out to write, when we get so bogged up in our daily work that we don't write.

And so no one knows us, you know, except the people we work with. And it is very difficult to get before a group of people and convince them that persons who write food books are often quacks. I talked before a group of men on fatty acids and organic gardening. They believe organically grown food is more nutritious. There was no way that I could convince them that our foods are not poisonous, our processed foods are not poisonous, because I was a dietitian and darn. Adele had sold them books for years and years, so who am I? We have to change this image of people who are the leaders and should be the leaders.

Senator SCHWEIKER. In my opening statement I said one of our problems is we left a nutritional vacuum and because we have a vacuum a lot of people run into any vacuum. I think that is the gap we have created ourselves, that has triggered that climate. One other question I have is, you didn't make any comment I don't believe on the school lunch or school breakfast program. Do you have any observations you would like to make on these, Mrs. Schaum?

Mrs. SCHAUM. On quality?

Senator SCHWEIKER. Well, nutritional aspects, what can or can't be done, what we are doing right or wrong.

Mrs. SCHAUM. I think that we are in the—we are in the right line of feeding programs. But I don't think they are being carried over. I don't think there is always a learning experience for the student.

For instance, we ask the students who come to college, "How was your school lunch in your school?" "Oh, jeez, I had to eat all those green beans and broccoli and Brussels sprouts—I really hated that thing—many foods I didn't like." In school lunch programs we never get to the nitty-gritty of telling students why we prepared those foods.

We are indeed providing them with adequate good nutrition but they think it is just another institutional meal. I think we are spending money to feed them, while much of the food goes in the waste can because we are not educating them to eat properly.

And we also have lots of these vending machines, that you were talking about, in the schools that are causing us a lot of problems. I think we are in a great movement. I think the breakfast program seems to be going well in the areas that it is in. I know there is a lot of controversy over the little cake that has the ascorbic acid and protein needs et cetera, in the one little cake.

I know there is a lot of discussion on that because it is teaching the student to eat sweets. Yet, when you look on the other hand if you have a place that does not have a kitchen, no place to prepare food, it is better than no breakfast at all.

Except I think we ought to educate the student that that was a specially prepared cupcake. It is not one he can go out and purchase on the shelf. I think these are the kinds of things, if we are going to have these programs, we need to teach these students, why are we having them, what is included?

Senator SCHWEIKER. Do you have any suggestion of what the U.S. Department of Agriculture can or should be doing or is doing that would be helpful in relation to this problem, any observations you might want to make about their work?

Or lack of it or one of the problems pointed out earlier was that even the nominal costs they put on their pamphlets, for obvious reasons, becomes a real block to the people who want to utilize them.

Mrs. SCHAUM. I think that is true, plus the fact that they are always not current. You can usually find something somewhere else that is a little more current. For instance our handbook No. 8 that we publish should have been revised years ago.

And we are still using it. And I think that I can find a lot of better things from the National Dairy Council, who works at providing colorful and interesting pamphlets for the students.

Most of the things the USDA puts out are black and white if I recall, and you know that goes over with a student just like a textbook, plunk. I think even bulk materials—even some from the commercial companies themselves, not just the National Dairy Council, but the Fleischman Co., for instance, puts out things we can use at the secondary level for our students where USDA is lacking in that.

Plus it is a hassle to order from USDA. You have to have the right form and it takes a long time to get the information where I can call the dairy council and have it next week. From USDA you have to prove you need it, who you are, how it is going to be paid for and have a special voucher for it. It is just sometimes hard to get these things. I think the Department of Public Health does better than USDA. We can get things easier from our Department of Public Health than we can from Washington.

Senator SCHWEIKER. All right. Well, I want to thank you, Mrs. Schaum and Janice, for your participation and help here this morning and commend you both for your interest and your efforts in this area.

Mrs. SCHAUM. Thank you.

Senator SCHWEIKER. Thank you very much. [Applause.]

Our next panel will be Dr. Stanley Schultz and Ronald I. Leberman. Will they please come forward?

While they are making their way here I want to observe that the coffee and donuts I put out for the press this morning have no sugar in them. [Laughter.]

We did make that concession in nutrition here this morning in the interest of keeping the press happy, too.

Now we have Dr. Stanley Schultz, professor of physiology, chairman of the curriculum committee, University of Pittsburgh School of Medicine; and Ronald I. Leberman, third-year medical student at Temple University. He is also a student AMA representative to the AMA Council on Foods and Nutrition.

Dr. Schultz?

STATEMENTS OF DR. STANLEY SCHULTZ, UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, PITTSBURGH, PA.; AND RONALD I. LEBMAN, THIRD-YEAR STUDENT, TEMPLE UNIVERSITY SCHOOL OF MEDICINE, PHILADELPHIA, PA.

Dr. SCHULTZ. By way of brief introduction let me state that I am Dr. Stanley G. Schultz. My early training was as a physician, but I am currently professor of physiology and chairman of the curriculum committee of the University of Pittsburgh School of Medicine.

I have served on the Gastroenterology and Nutrition Training Program Committee on the National Institute of Arthritis, Metabolic and Digestive Diseases and am currently an ad hoc consultant to that Institute.

I am honored to have been invited to present my views on education in nutrition to this select committee.

Unlike many other comparatively well-defined and circumscribed subjects— for example, cardiology, nephrology, et cetera—nutrition covers a wide spectrum and its place in the medical school curriculum must be considered in the light of the specific educational objectives that should be required of all graduating medical students.

NUTRITION IN MEDICAL SCHOOL CURRICULUM

The subject of nutrition encompasses at least four readily identifiable objectives with respect to medical education:

First, the student must be aware of the role of malnutrition as a causative factor of defined disease states. The term "malnutrition" includes generalized as well as specific undernutrition and overnutrition so that the student must be aware of the pathological consequences of generalized and specific nutritional deficiencies as well as generalized and specific nutritional excesses.

Second, every medical student should be educated in the nutritional adjustments employed as therapeutic adjuncts in the treatment of chronic diseases.

For example, he must be knowledgeable in the dietary manipulations employed in the treatment of patients suffering from diabetes mellitus, hypertension, chronic renal disease, cardiovascular disease, et cetera.

Third, every student should be educated in the special nutritional requirements incurred during the normal life cycle, for example, during infancy, early childhood, pregnancy, et cetera.

Finally, and perhaps most important, there is now evidence that presumably "normal" American dietary practices may predispose a relatively large fraction of our population and certain ethnic groups to premature cardiovascular disease and possibly other acute and chronic debilities.

Thus, the graduating medical student should be trained in nutritional counseling as an instrument of preventive medicine.

The curriculum at the University of Pittsburgh School of Medicine, as well as the varied curriculums in most of the medical schools in this country, are adequately structured to meet the first three educational objectives cited above.

Proper instruction in medicine, pediatrics, surgery and obstetrics certainly should cover the consequences of generalized and specific nutritional deficiencies as well as excesses.

Further, the use of dietary adjustments as a therapeutic adjunct and the specific nutritional requirements during the normal life cycle can be adequately conveyed within the present curricular structures; failure to do so is not a fault of the curriculum but, rather, that of the teaching faculty and inadequate communication between departments.

On the other hand, perhaps the most important element of educa-

tion in nutrition; namely, the use of nutritional counseling as an instrument of preventive medicine, has been grossly understressed.

Most deficiency states can be readily diagnosed and equally readily treated, but in this country they should never have occurred in the first place.

The reasons for these occurrences are multiple, and many of them, for example, economic pressures, are beyond the scope of medical education.

Nevertheless, medical education is not entirely without fault. Its focus is largely on diagnosis and treatment and the well-known proverb "an ounce of prevention is worth a pound of cure" is just beginning to see the light of day; given the skyrocketing costs of medical care today one might well paraphrase this statement to read "an ounce of prevention is worth a ton of cure."

In short, few medical school curriculums adequately stress the potential preventive accruments of proper nutrition in a systematic fashion.

Although every well-trained physician will question their patients with respect to whether or not they smoke cigarettes and how much alcohol they consume, dietary habits are for the most part ignored unless indications of undernutrition or overnutrition are already apparent.

One of the reasons for the lack of a systematic emphasis on nutritional counseling in medical education is that too little is known with respect to the way in which long-term and presumably normal nutritional habits may predispose individuals to acute as well as chronic diseases.

Far more research is needed in these areas and it is not unreasonable to expect that teaching effectiveness will parallel the acquisition of knowledge.

But, perhaps equally important, current curriculums tend to underplay preventive medicine in general and the role of nutritional counseling as an instrument of preventive medicine in particular.

For the most part, this subject is taught within the context of acquired diseases so that the inevitable emphasis is one of "crisis medicine" rather than "crisis prevention."

NUTRITION EDUCATION FRAGMENTED

Finally, and perhaps most important, nutrition is an "orphaned" discipline, taught in fragments throughout the curriculum. It lacks a formal organizational structure that could systematically coordinate and augment the efforts of various disciplines, identify educational deficiencies, and upgrade the professional status of this subject.

In the absence of an organizational structure, the depth and extent of instruction in nutrition is too often a function of the personal attitudes of individual faculty members.

The traditional approach toward improving medical education in a given discipline is to create a department or division with a vertical organizational structure. Although this is adequate for many of the traditional disciplines, in my opinion it is not optimal for the subject of nutrition.

Nutrition is an interdisciplinary subject which encompasses the pre-clinical sciences, the clinical sciences, the behavioral sciences and the

social sciences. Therefore, an optimal organizational structure for increasing the emphasis on nutrition in medical education should be designed along horizontal rather than vertical lines and could well be modeled after the multidisciplinary center programs developed by the National Institutes of Health.

Although nutritionists should provide the leadership and direction of such an organization, input must be obtained from biochemists, cell biologists, physiologists, clinicians, behavioral scientists, epidemiologists, statisticians, social scientists, and members of the allied health professions.

The responsibility of the director of this program would be to integrate and coordinate these efforts with respect to in-house and community research activities as well as medical and public education.

The principal shortcoming of horizontal educational structures is that they are difficult to organize, coordinate and govern. They traverse departmental lines of authority and place the participants in a position where they must serve two loyalties, their departmental responsibilities and those of an interdepartmental program.

Nevertheless, though easier to establish and coordinate, the traditional departmental structure would not optimally subserve the goals of a broad interdisciplinary research and educational program in nutrition, which of necessity must span the entire spectrum from the laboratory bench to the community.

Thank you very much, Senator.

THE NEED FOR NUTRITION EDUCATION IN MEDICAL SCHOOLS

Senator SCHWEIKER. Thank you very much, Doctor.

Now we will hear from Ronald Leberman.

Ronald?

Mr. LEBMAN. The need for nutrition education in medical schools has been recognized by individuals and groups dedicated to excellence in medical education as well as by leaders in the field of nutrition.

The role of nutrition in the pathogenesis and management of disease and under stressful conditions is well established. Nutritional factors are significantly involved in the proper diagnosis and treatment of disease.

Increased interest in community health has led an increasing number of medical students to choose careers in community medicine and family practice. These students have become increasingly aware of the importance of nutrition as a component of community health.

Recognition of the failure of medical schools to provide adequate education in the area of nutrition resulted in a conference on Nutrition Teaching in Medical Schools held in Chicopee, Mass. in the summer of 1962. The participants in the Chicopee conference noted this failure and made some strong recommendations to the AMA Council on Foods and Nutrition.

Lack of sufficient implementation of these recommendations prompted the council to seek the aid of the Nutrition Foundation and several other interested organizations in planning a followup conference on guidelines for nutrition education programs which was held in Williamsburg, Va. in June 1972.

Illustrative of the inadequacy of instruction in nutrition is a survey of nutrition education in medical schools in the New York City area conducted by one of the participants in the Williamsburg conference. This study revealed that:

(1) Only one of the seven schools studied had a required course designated "Nutrition." Other courses offered little identifiable nutrition information.

(2) The students generally agreed that they had little course work in nutrition, and thought that nutrition should be an important part of their training.

(3) None of the schools used paramedical personnel, namely dietitians, public health nutritionists, or nurses directly in the teaching of medical students.

This study attempted to make an objective evaluation of the nutritional knowledge of the medical students by means of a questionnaire. The results showed that although fourth-year students knew more about nutrition than first-year students, their knowledge in the areas of applied nutrition, social aspects of nutrition, and community nutrition was significantly deficient.

With this background the participants in the Williamsburg conference categorized "the essential nutritional principles that every physician should master" as follows:

The physician should have a scientific understanding of digestion, absorption, metabolism and metabolic balance; the nutrient requirements for growth and maintenance; the dietary management of metabolic and other diseases; and the diseases of malnutrition, overnutrition, and abnormal nutrition needs. This basic knowledge is best obtained during medical school training . . . During his clinical experience the medical student should by precept learn that applied nutrition is an intrinsic part of the clinical assessment and management of patients.

HOW NUTRITION IS INTRODUCED IN MEDICAL SCHOOLS

Having determined the need for nutrition education in medical schools and the essential nutritional knowledge that every physician should have, the conference participants proceeded to examine the means by which this essential information can be introduced into the medical school curriculum both at the preclinical and at the clinical and public health levels.

Examination of specific programs at several medical schools revealed that these programs range from structured courses identified as nutrition, such as the program at Boston University, to materials interspersed in many courses with no identification of nutrition as at the University of Southern California.

It was the consensus of the Williamsburg conference that no exact format can be applied to all medical schools, nor is such an approach desirable. Rather, a coordinated curriculum should be developed including required basic material identified as nutrition and elective courses which would compete with other elective courses for the student's time.

With these concepts in mind, the Williamsburg conference developed the following guidelines:

For an effective training program in nutrition to exist, there must be an individual or group of individuals interested and skilled in the administration of the program; an agreement on the curriculum for incorporation of the training in nutrition, and the financial support for the program * * *.

The director of a nutrition program should have specific training in clinical nutrition and meaningful experience in nutritional biochemistry as well as a high level of understanding of basic educational and administrative techniques. His function should be to coordinate the nutrition teaching within the school and to monitor its effectiveness. In addition to participating in the training program, the director should stimulate among both students and faculty an interest in nutrition as it applies to health.

To obtain a commitment on the part of an institution toward a nutrition training program, there first must be a realistic proposal upon which the development can be based. To this end, a systematic approach to development of a core curriculum should be detailed by members of an organizing team selected for their interest, skills and knowledge both in nutrition and medical education. While varying from institution to institution, this committee could include a physician active in the field of nutrition, a dietetic nutritionist, one or more practicing physicians, undergraduate students at varying levels, faculty representing one or more of the basic sciences, and a communications specialist. In addition to the incorporation of nutrition content into required core curriculum, this committee should develop attractive, competitive elective courses.

In summary, nutritional concepts play an essential role in the etiology, assessment, and management of various medical problems. Nutrition education in medical schools is at present woefully inadequate. The essentials of an effective training program in nutrition can be incorporated into existing curriculums by coordinating the nutrition content of required core curriculums and developing attractive, competitive elective courses.

Senator SCHWEIKER. Thank you very much.

I will begin with a few questions for Dr. Schultz.

I wonder first, for the record, would you define the term overnutrition you used?

Dr. SCHULTZ. Obesity would be an example of generalized overnutrition.

On the other hand, an instance of specific overnutrition would be, for example, a hyperlipemia resulting from the specific excessive use of saturated fats, cholesterol, et cetera, in spite of the fact that the individual need not be obese.

So I would differentiate between the general phenomenon and the specific phenomenon.

Senator SCHWEIKER. Doctor, you state the first three objectives of training in nutrition should, or can be achieved through existing medical school curriculum. But the crucial question is, are these objectives achieved?

You imply they are not achieved in all schools. How widespread is this? I wonder if you would elaborate for us.

Dr. SCHULTZ. To give actual data would be near impossible. The problem is that the extent to which these objectives are achieved depends very much on the attitudes of the individual faculty member inasmuch as there is no coordinating organizational structure.

For example at the University of Pittsburgh, in the department of obstetrics, and you will be hearing from a witness from that department later this afternoon, the student is very well trained in the nutritional requirements of the pregnant woman.

On the other hand, in, say, another department of obstetrics, this nutritional element may be understressed.

The fact is that there is no structure that specifically designates the content of particular formal course offerings, so that the contents reflect individual attitudes.

Senator SCHWEIKER. How does your medical school go about approaching the role or problem of nutrition and preventative medicine?

Dr. SCHULIZ. Currently, we have no formal course in nutrition. An elective course in nutrition was offered for a number of years. It was a dismal failure, in terms of attendance. It started off with great enthusiasm, but gradually there was a tremendous attrition in participation.

One of the problems was that nutrition was removed from the context within which it should be taught to medical students. The most appropriate context, and that toward which most medical school curriculums are moving today, is an integrated program, in which the components of nutrition are linked to specific health problems, or the prevention of specific health problems.

Optimally, when, for example, in our second year, our students are instructed in cardiovascular disease, it is at this time that the role of proper nutrition in the prevention of cardiovascular disease, premature coronary disease, stroke, et cetera, should be taught. To remove it from this context is artificial and generally has failed nationwide.

Senator SCHWEIKER. Could you approach it on the reverse, on the basis that, say, an applied nutrition course, instead of teaching pure nutrition, you do a series of case studies of nutrition to disease and make the nutrition course relate strictly to the health, the disease cycle.

I don't know how the original course was taught.

Dr. SCHULIZ. I think one could do this.

However, it would be difficult to implement such a program within the existing medical school structure. For example, there are already existing vertical structures or divisions charged with instruction in a particular area: for example, cardiology, nephrology, hematology, et cetera. It would be much easier to introduce nutritional instruction within these established disciplinary offerings than to discuss diseases within the context of a course in nutrition. The question is, do you plug medicine into a course on nutrition, or do you plug nutrition into courses on medicine. In my opinion, the latter alternative is preferable because the courses in medicine already exist, and instruction in nutrition would be more effective within that context.

Senator SCHWEIKER. Doesn't fit the present existing medical school setup, is what you are saying?

Dr. SCHULIZ. Correct. However, there is nothing inherently wrong about the existing medical school structure that precludes proper instruction in nutrition. The problem is that in the absence of a horizontal structure that could coordinate a systematic program in nutritional education, it is difficult to identify unnecessary redundancies and, more important, gross deficiencies. Because instruction in nutrition overlaps so many disciplines and because curriculum time is decreasing relative to the explosive increase in biomedical information, there is a natural tendency for discipline A to assume that a specific area of nutrition was already covered by discipline B and that they need not spend any time on it. At the same time, discipline B being equally pressed for time can assume that this area in nutrition should be covered by discipline A. The end result is often that this area of nutrition is not covered at all.

Senator SCHWEIKER. You get into the problem of everybody's job is nobody's job?

Dr. SCHULTZ. Senator, this is what I meant by an orphaned discipline. It is a discipline that does not have a parent. Given a parent or overseer, the problems alluded to above could be easily rectified. Deficiencies in nutritional education could be readily identified and rectified. In the absence of an overseer, a comprehensive and systematic coverage of this subject would be rendered accidental and, therefore, unlikely.

PREVENTIVE MEDICINE THROUGH GOOD NUTRITION

Senator SCHWEIKER. Not talking about your school, I am talking about all medical schools, why in general, in using your own words, do medical schools tend to underplay preventative medicine and the role of nutritional counseling as an instrument of preventative medicine.

I couldn't agree more with what you said in your opening statement along this line. I guess my question is, then, why is not more emphasis put forth?

My favorite analogy is there isn't a company in the country, and I came from one of them, that doesn't have a very specific, very precise, exact preventative maintenance schedule of every machine they own, the time it is oiled, greased, it is serviced, without exception, because there is a tremendous dollar-and-cents relationship to their preventative maintenance programs and the performance of that machine.

Why don't we do that to our own bodies? And why are we so backward in applying everything to machines and not to ourselves?

Dr. SCHULTZ. I think there are probably two components to this answer.

One is the need for more public education. Currently, there are two groups of people who see physicians when they are healthy. Those are the children in the pediatric age group whose mothers will bring them periodically to a physician, in spite of the fact they may have no particular complaint, simply to monitor growth and development.

The other is the pregnant woman who will see an obstetrician for prenatal care.

Other than that, you will find that few people go to a physician when they are healthy after they have passed the pediatric age group or if they are not pregnant. So that the physician is deprived of the ability to practice preventative medicine by the fact that a person generally does not visit unless he is ill.

Senator SCHWEIKER. You are raising some pretty fundamental questions there, that our Health Subcommittee and other subcommittees are now studying, such as the Health Maintenance Organization, and the fee-for-service approach of the medical profession, which I gather you are alluding to.

Dr. SCHULTZ. Yes. The fee for service today is so high that an individual, unless subsidized for preventive medical care, or annual physical examinations, simply will not go to a doctor and pay his fee when he is feeling fine.

Yet, it is just at that point that the physician could, perhaps, by detecting high blood pressure, early diabetes, or a hyperlipemia, be of value in preventing some of the later consequences of these abnormalities.

Senator SCHWEIKER. Would not the average doctor almost faint if a patient came into his waiting room and said he was feeling fine, just wanted some advice?

My reaction to the first question asked is, how bad are you, and if you are not too bad, there are three patients behind you that are worse.

I don't know, I am just raising the question.

Dr. SCHULTZ. I don't know. I think this is a matter of where we put the cart and the horse. I think that if medical schools promote preventive medicine and if, at the same time, the public is educated in this direction, the doctor won't faint.

The problem now is that the doctor may faint because the public is not educated and it is a rare individual who will walk in and say, "Doc, I am feeling fine, I just want a thorough checkup."

Senator SCHWEIKER. I think you have put your finger on it. I agree with your pointing out these situations and it probably is a cart before the horse situation.

I think the health maintenance organization bill that is making its—has already passed the Senate, now before the House, would provide the first framework whereby it would be to the economic advantage to the doctors to treat people for—before they got sick, because of the prepaid group approach as opposed to the other way.

And also to encourage the patient to come in before he is sick. So I think you are quite right in pointing out that some of the problems relating to our present medical delivery system, and that is exactly what you did say.

You do mention the—you did mention a moment ago, the NIH had a program as a possible model for nutrition. I wonder if you would elaborate on that a little bit?

Dr. SCHULTZ. Simply that it is a multidisciplinary program. I don't want to emphasize the word "center" because the way the NIH Center program was designed originally to identify specific centers throughout the Nation where certain evidence of excellence in a given area could be demonstrated.

The multidisciplinary aspect is the feature that is terribly important. The few departments of nutrition in medical centers in this country, some of which are excellent, have very little impact because they are isolated and removed from the other aspects of medical education.

The problem is that by building a vertical structure, they have placed themselves among many other vertical structures all of which compete for the limited time in the medical curriculum.

Senator SCHWEIKER. Ron, you have heard me ask Dr. Schultz some of these questions. I am sure you may have some views on some of them. Is there any specific view I raised that you would like to comment on?

Would you like to comment on any of the questions or answers as a medical student on any of the issues I have raised with Dr. Schultz, or do you want me to go ahead and ask you some other questions, first?

Mr. LEBMAN. Well, go ahead.

Senator SCHWEIKER. OK, you mentioned the role of nutrition in disease is well established and the need for nutrition education in medical schools is well recognized.

Why do you think then, medical schools continue to slight nutrition offerings in their curricula?

Mr. LEBMAN. Well, primarily there are not enough people who are really interested in nutrition to offer these services in the medical schools. Furthermore, there is no program for nutrition education in many schools, and these schools just don't have the funds or the interest to start one.

Senator SCHWEIKER. Now, you are on the student AMA Council Committee on Nutrition, is that right?

Mr. LEBMAN. Yes.

Senator SCHWEIKER. Obviously we preselected you to start with. But going back to your own medical education experience, what kind of nutritional education is available to you, electively, or otherwise, and how would you evaluate the present options to you in this area in our own schooling?

Mr. LEBMAN. Well, at Temple, there are no electives in nutrition. There are a few faculty members who are interested in nutrition but they have very little exposure to the students. I was considering saying that we had absolutely no nutrition education at all until some classmates reminded me that during our freshman year, in biochemistry, the day of the final exam, we had an hour lecture on nutrition by somebody from one of the research institutes associated with the medical school who gave us about an hour lecture on his own research.

That was the sum total of our nutrition education.

Senator SCHWEIKER. Do you have any ideas as to how the nutritional education course should be structured, in other words, as to whether it should be a separate course or integrated with other courses, or just what would you see as a way of structuring nutritional education in medical schools?

Mr. LEBMAN. From the program at Temple, nutrition could be really integrated into the curriculum if there were just one or two people who had a little bit of power and the interest in seeing to it that nutrition content was included in the many nutrition-related courses.

We have an interdisciplinary program where we have courses on organ systems, cardiovascular, reticulo-endothelial, et cetera. There are areas where nutrition could be added if somebody had the interest to do it, and where it could be presented in ways which would seem to be relevant and important.

In addition, there is just no contact between the people who provide the food for the patients and the house staff. For example, I was recently discussing with my resident a patient who was recently diagnosed as having one of the hyperlipemias. His therapy was to prescribe an American Heart Association recommended diet and to have the dietician tell the patient what the diet should be. He did not know what the diet was, and had no interest in talking to the dietician about what that type of diet would consist of.

Senator SCHWEIKER. Can you tell us anything about the role of your student representation on the council, AMA Council on Nutrition, is there anything you might want to give us in that respect that would be of interest or helpful, or an index of activity here?

Mr. LEBMAN. Well the one thing that I have gotten out of my contact with the council on foods and nutrition is that they are a pretty active interested group in—and they are interested in making people aware of good nutrition and in helping coordinate programs of nutrition in schools.

Unfortunately, too few people are aware that they exist, and of the information that they can supply.

INTEGRATED EDUCATIONAL PROGRAMS

Senator SCHWEIKER, Doctor, coming back to the point both you and Ronald are making, you feel—what is the best way then, I see your structure in terms of how it ought to be structured, nutritionwise, how do we implement that in a medical school?

Somebody touched about the interdisciplinary group. What is the practical way in a medical school we implement this?

Dr. SCHULTZ. From the point of view of enhancing nutritional education in medical schools, the problem is certainly not a difficult one. Interdisciplinary or integrated educational programs are becoming more and more popular in medical schools throughout the Nation. The particular modus operandi by which they are established and implemented varies with the particular governance policies of the various schools. For example, at the University of Pittsburgh School of Medicine, the curriculum committee, which is a standing committee of the faculty, could recommend increased emphasis on nutrition in our second year course on introduction to clinical medicine. This recommendation is then passed on to our executive committee and the faculty at large and, if approved, constitutes a mandate to the dean and the associate dean for academic affairs to implement this decision. The course on introduction to medicine currently is an interdisciplinary effort involving internists, surgeons, radiologists, pediatricians, and so forth.

The course content and time allocation is determined by a steering committee chaired by the associate dean for academic affairs. If funds were made available to employ a professional nutritionist, such an individual could become a member of the steering committee whose charge would be to ensure that the nutritional aspects of disease and nutritional counseling would be properly stressed in the appropriate areas of this educational program. He would be, in a sense, the overseer of nutritional education just as other members of the steering committee are overseers of education in the more traditional disciplines; this is but one mechanism by which the subject of nutrition would gain a parent who could ensure a systematic integration of this subject in the medical school curriculum within the appropriate clinical context. Now, because there is virtually no area of clinical medicine in which nutritional education does not play a significant role, this individual must be accorded the power to traverse vertical departmental or divisional lines of authority and command time in the curriculum from all of the traditional disciplines.

Senator SCHWEIKER. With that kind of structure it does require some rather stringent imposition of curriculum to be effective, you are going to have to go through some authoritarian act or something, right?

Dr. SCHULTZ. It is becoming increasingly apparent that any modification of medical school curricula requires rather stringent impositions together with appropriate evaluative procedures. The time is passed when each and every department or division can be permitted to "go its way on its own." On the other hand, if these impositions repre-

sent the voice of the faculty at large, they can hardly be called authoritarian. Instead, they constitute a mandate to the dean and his associates for implementation of these recommendations limited only by the human, physical, and financial resources of the school. To be sure, instances will arise in which a given recommendation will meet with resistance from one or more departments. Nevertheless, the responsibility for educational policy lies in the hands of the faculty and it is the dean's responsibility to implement the faculty's will and, if necessary, to use his administrative powers to overcome resistance. This is certainly not a pleasant way to bring about changes in curriculum and, furthermore, experience has shown that changes that are "forced down the throat" are often doomed to failure. However, it should be stressed that reasonable recommendations by the curriculum committee and the faculty whose feasibility and implications have been carefully thought out, rarely meet with uncompromising resistance. I would be shocked if any reasonable effort at enhancing education in nutrition within the medical school curriculum would meet with serious resistance.

RESEARCH AND NUTRITION

Finally, I would like to go on record as urging the importance of combining research in nutrition with education in nutrition. The two cannot be divorced at the medical school level. One cannot teach what one does not know and experience has shown that "soft information" cannot be taught as effectively as "hard" information. For example, I was struck by the statement of a previous witness that the class A school lunch includes a slab of butter and a cup of whole milk. Neither of these are essential ingredients of a balanced diet. Furthermore, there is considerable evidence that the excessive ingestion of saturated fats and cholesterol may predispose certain individuals to premature cardiovascular disease. In addition, autopsy studies have shown that many healthy American males already have moderate coronary artery disease at a very early age. In the light of this evidence, perhaps the class A school lunch should be examined more thoroughly. The possibilities that we are initiating disease processes at a very early age many years before they become overt, and that we are inculcating less than optimal dietary habits in children which will be difficult to break 20 to 40 years after these habits have been established, requires further investigation.

Senator SCHWERKER. Have you read Dr. Nutkin's(?) book from London? He obviously would not agree with you, I suspect.

Dr. SCHULTZ. Yes, but in this area, there is a great deal of disagreement. That is why considerable research is needed to resolve these issues. Finally, I have read Dr. Thompson's formal testimony and have discussed this issue with him. I agree fully that the "immediate payoff" of nutritional education is in the area of obstetrics and prenatal care as well as the pediatric age group. Nevertheless, I sincerely challenge the notion that this country should focus entirely on "immediate payoffs." It should be recalled that the late Professor Einstein's theories on nuclear energy awaited decades before they had a "payoff." In short, what we currently know about nutrition can certainly aid various elements of our society immediately and with a minimal monetary expenditure; the Federal Government should certainly encourage these efforts and afford them the necessary monetary support. At the

same time, if we were to focus entirely on immediate payoffs, this would be a narrow and short-sighted venture; it would stress the little that we know about nutrition and ignore vast areas with respect to the role of nutrition in health and disease that are today speculative, suggestive or unknown. The definitive resolution of these issues will take funding, time and multidisciplinary research efforts followed by appropriate education in the medical profession, the allied health profession and the public. Such an effort would be considerably most costly and far more uncertain with respect to "payoffs" than simply reinforcing what we already know, but the end results could be of immeasurable value in terms of preventive medicine and the health of our society.

Senator SCHWEIKER. You made a very good point. I think this whole area of research and nutrition has to be tied together. I think you are quite right. And I think that is a very valid suggestion to relate the two.

I also think it will have more impact on the curriculum to strongly tie it together because it will make the individual student far more aware of the consequences of the fact there is an honest medical difference of opinion in these areas, but they all have some relationships that are intrinsically related to a disease cycle.

So I think that is a good suggestion. I also think your structure is a good suggestion, and I am going to look into considering my bill in that light and see what might be done to incorporate some of your suggestions there in terms of structure.

So we appreciate it very much. Well, I want to say to both Dr. Schultz and to Mr. Ronald Lebman, that we appreciate their participation here this morning and thank them for being with us, and for their contributions.

At this point in time, we will recess the Select Senate Committee on Nutrition until 2:30 this afternoon.

The committee will be in recess.

[Whereupon, at 12:35 p.m. the hearing was recessed, to reconvene at 2:30 p.m., this same day.]

AFTERNOON SESSION

Senator SCHWEIKER. The afternoon session of the Senate Select Committee on Nutrition will please come to order.

Before we begin with our next witness I would like to add a statement from Mrs. Anthony Caggiula, president of the Pittsburgh Dietetic Association. I would like to include that statement as part of the hearing record.¹

Unfortunately, not everyone who wanted to testify today would be able to because of time restriction. But I do appreciate Pittsburgh Dietetic Association for giving us this statement and be assured that not only will I read it but I am sure the committee staff will as well. We greatly appreciate it.

Senator SCHWEIKER. I would like to call as our next witness Dr. Douglass S. Thompson.

Dr. Thompson, would you please come forward, and Dr. Theiner, assistant professor—just come up and have a seat—and Mrs. Kolodner.

¹ Retained in committee files.

Is Dr. Hutchinson here? [No response.]

He is not.

Our first witness will be Dr. Douglass S. Thompson, clinical associate professor, obstetrics and gynecology, community medicine at the University of Pittsburgh School of Medicine; also director of community health, Magee-Women's Hospital, Pittsburgh.

Dr. Thompson, glad to have you here and would you introduce who is accompanying you?

STATEMENTS OF DR. DOUGLASS S. THOMPSON, DIRECTOR OF COMMUNITY MEDICINE, DEPARTMENT OF OBSTETRICS AND GYNECOLOGY, MAGEE-WOMEN'S HOSPITAL, ACCOMPANIED BY DOROTHY KOLODNER, NUTRITION, CONSULTANT, OB-GYN MEDICAL CENTER CARE CENTER, MAGEE-WOMEN'S HOSPITAL, PITTSBURGH, PA.; AND DR. MICHA THEINER, ASSISTANT PROFESSOR, DEPARTMENT OF BIOCHEMISTRY, SCHOOL OF DENTAL MEDICINE, UNIVERSITY OF PITTSBURGH; AND DR. FRANCIS L. MIKLOS, ASSOCIATE PROFESSOR, DEPARTMENT OF BIOCHEMISTRY, SCHOOL OF DENTAL MEDICINE, UNIVERSITY OF PITTSBURGH

FOSTERING NUTRITION EDUCATION

Dr. THOMPSON. Thank you very much, Senator Schweiker.

I am accompanied this afternoon by Mrs. Dorothy Kolodner, who is a nutrition consultant to our department at the Magee-Women's Hospital and who has had long experience in the field of nutrition in Pittsburgh and elsewhere.

Dr. Donald Hutchinson, chairman of the Department of Obstetrics and Gynecology, was unable to come and sends his regrets.

I speak this afternoon, Senator, on the subject of nutrition education in medical schools. Recent history is studded with efforts to introduce nutrition education into medical schools and thereafter to make it viable. It is not a success story in terms of its results. Why?

Well, ultimately, nutrition education has to be translated into concepts of food and eating if patients and people are to benefit from it. In a real sense nutrition education is in the curriculum, but in biochemical and enzymological terms.

It has not been translated, however, into the patient's language of food and eating which is viewed as too common and natural, too ubiquitous, and too familiar to study and consider seriously.

One wants to eat and enjoy food, not to analyze and study it. This is especially so for a medical student who is given the opportunity to study such uncommon, for him, subjects as electrolyte imbalance, hyperthyroidism, and low birth weight infants.

Knowing these sorts of things will make him a physician and thus distinguish him from others.

Everybody knows about food, he thinks, and, anyway, food is women's domain. Clinical medicine, the major focus of medical education, is men's domain.

Men who first receive and then control medical education seem to have deemphasized the food aspect of nutrition education. After all,

food is mother in the kitchen or sister and her home economics course, not men being physicians.

Then, too, all those women dietitians in the hospitals where medicine is learned constantly reinforce this original impression.

Sad, but true.

Hopefully this atmosphere is changing and your concerns, Senator, with nutrition education, particularly your interest in helping medical schools pay for it, can and will develop fully and be welcomed by all.

As a part of this changing atmosphere, we see growing economic and consumer interests in food, possible evidence that malnutrition is not limited to far-away lands, growing but very incomplete information that strongly hints at nutrition's role as an etiological factor in cardiovascular disease; nutrition's expanding scientific base; increasing interest in the commonly seen phenomenon of actual or apparent overnutrition; various changes brought about by women's liberation activities; increasing numbers of minority groups going into medical school; and a growing faculty emphasis and student interest in medical education directed toward educating patients rather than merely prescribing for them.

This latter has to do with translating biochemical nutrition knowledge into the patient's food and eating language.

Teaching medical students how to do this is, I feel, a compelling reason to foster nutrition education, broadly defined, in medical schools.

Earlier I mentioned three examples of situations or diseases that always have been regarded highly as subjects to study in medical school—electrolyte imbalance, hyperthyroidism, and low birth weight babies. All involve biochemical or physiological entities which are studied and treated thoroughly. All also involve foods and eating in either a preventive or therapeutic way, but these aspects are not always translated to the patient.

LOW BIRTH WEIGHT BABIES

Let me expand on this by saying more about low birth weight babies in which my area of medicine, obstetrics, has a special interest.

Low birth weight babies are babies which weigh less than 5½ pounds—2,500 grams—at birth. Some are born before completion of a normal gestational term of 37 through 42 weeks and some are not.

However, considering all as a group, they comprise about 8 percent of all births, but about 14 percent of all births to nonwhite mothers—generally equated to mean low-income mothers.

Seventeen percent of these babies die during the first month of life, a rate 30 times greater than that of higher weight babies.

They also have more postnatal illnesses, child growth failures, neurological and physical handicaps, and mental retardation.

The factors that contribute to low birth weight are many and complex. The major factor, however, appears to be inadequate and improper nutritional intake by their mothers during pregnancy and probably before as well.

There is much evidence for this. Part of it is the fact stated above, that low-income mothers have almost twice the incidence of low birth weight infants as do other mothers. But these nutritional needs tradi-

tionally are not well explained and emphasized to pregnant women.

Their physicians, to whom all patients primarily look for guidance, have not been taught as medical students or residents to deliver this message effectively.

A recent query of 22 junior medical students indicated that, while they know approximately how many grams of protein and how many calories a pregnant woman should get each day, only half of them realize that a pregnant adolescent who has an extra risk of having a low birth weight infant should get more calories than a pregnant adult because of her own growth needs.

Furthermore, they apparently really do not know what pregnant women should eat to get this necessarily daily protein since only one of them knew how much protein there is in a quart of milk—33 grams. This is important to know because it equals one-half of their daily protein need.

They also fail to recognize that proper eating during pregnancy should lead to a weight gain of at least 22 pounds or more since almost all of them would be content if their pregnant patients gain less, thus demonstrating inadequate intake of food.

We need to teach these concepts and equip these students to translate all of this to the patient's language—food and eating.

I urge you to support this kind of nutrition education in medical schools. Fund clinical departments to do it—an approach I favor, although I realize there are others.

If our Department of Obstetrics and Gynecology, for example, had an additional \$35,000 a year to mount such a teaching and service program we could influence each year the way 135 medical students and 8 residents would educate their present approximately 2,000 annual prenatal patients as well as their future patients.

The approach primarily would be the same that we use in all clinical teaching—supervision of patient care plus specific education and guidance for patients by nutritionists to reinforce the physician's message.

We would strive to make nutritional concerns real and clinical to these students—not isolated nor "public healthish."

This kind of care alone would go a long way toward reducing the annual incidence of low birth weight babies toward a probably irreducible 2 percent minimum.

This goal could be realized even more fully if the Government would see to it that all pregnant women have sufficient money to buy the necessary food that their physicians and health care providers would be educating them to eat.

All of these dollars would be returned to society many times over by the reduction in the cost for the care of the baby and for the assistance that many such babies will require throughout their lives and for all of which someone ultimately has to pay.

Help us to help your constituents. You can then become benefactors of as many as 200,000 U.S. newborns each year.

Thank you.

NUTRITION AND DENTISTRY

Senator SCHWEIKER. Thank you, Doctor. Dr. Theiner, do you want to proceed with your statement?

Dr. THEINER. Yes. First of all Senator Schweiker, I would like to express my appreciation as a concerned educator of your concern with nutrition education in medical and dental schools. While eating lunch and thinking about what was said this morning, I thought I ought to present you with an award. The apple is a symbol of prevention, for you know that "An apple-a-day keeps the doctor away." Apples were on sale at the cafeteria of the Federal Building here. But, to choose them over other desserts, I had to be informed of their superior nutritional and preventative value and be motivated to make this choice.

I would now like to clear off the table all those matters on which we do not seem to have any disagreement. First, I think everybody agrees that prevention is necessary and that it is being neglected.

Second, there is too much ignorance of nutrition among the public. Third, the same unfortunately holds for most physicians and dentists, present company excluded. Fourth, as has already been stated in the morning, nutrition is a neglected orphan in medical schools and, I am sorry to say, also in dental schools.

In a written statement presented to you at this time I detail this fact and some of its aspects—aspects from which we can learn quite a lot about what we ought to do and what we ought not to do. Before we go to dental education, specifically a few words about nutrition education in general.

I view education in general as a pyramid. Specifically in this case, the information which goes into teaching nutrition courses comes from research and the research is done mostly by scientists. Most of these scientists at the moment are university faculty. These are the people who teach the college students, the medical students, the dental students, and the nutrition specialists, such as dietitians, diet therapists, home economists, and others. This is the broader base of the pyramid. The smallest part is, of course, the university faculty, and the smallest one of all is the faculty of medical and dental schools.

Their students are the future physicians and dentists and the college students—who later become public school teachers from whom we have heard this morning—they are the people who can and should carry the message to the public.

If there is a deficiency in their activity in this field, it may be partly their fault and partly the education that they do not receive from the university faculty.

They in turn pass the information on to parents and children, and this is our public; this is the public of the future. And so if we look at this picture, I think from the economic point of view, the best investment of all should be to start from the top because it is the smallest number.

The most obvious thing that is needed, is an in-service training of the present faculty. There is good reason for me to say that, especially for dental schools. I don't want to say anything about medical schools because that is not my field. I would like at this time to ask permission to forgo reading the entire written statement because it is much too long and detailed, and because the first part of it echoes pretty much what you have already heard in this committee on March 5.

Senator SCHWEIKER. We will publish your complete text in the hearing and you may proceed then. How would you like to proceed?

[The complete statement of Dr. Micha Theiner follows:]

PREPARED STATEMENT OF DR. MICHA THEINER

My name is Dr. Micha Theiner. I am Assistant Professor of Biochemistry in the School of Dental Medicine at the University of Pittsburgh. My teaching responsibilities include the instruction of dental students in biochemistry and nutrition and instruction of dental assistants in general chemistry. I feel privileged to be associated with Dr. Francis L. Milkos, who has been teaching nutrition to dental students, dental assistants and oral hygienists for about eight years and has done so much to interest the students in this subject. I would like to acknowledge his sage advice and encouragement that helped me in my efforts to make nutrition play a greater role in the teaching of our students and our service to the patients.

My qualifications do not arise from contributions to nutrition research and an impressive list of publications. Rather, I hope that you will listen to my remarks because of my position as an enthusiastic teacher of a complicated subject, whose efforts to make the subject relevant to the students' professional practice are frustrated by the lack of funds to start training programs that—I feel—are vital and of great potential. My formal training in food technology, biochemistry and nutrition are the basis of my competence to teach nutrition.

You will easily notice, I am sure, that I have been strongly influenced by Professor Abraham E. Nizel of Tufts University, whose testimony was heard in this Committee on the 5th of March. I am proud to be one of Dr. Nizel's many disciples and gratefully acknowledge his help and encouragement in the preparation of this statement.

Please note that the opinions expressed here are my personal opinions and not the official policy of the School of Dental Medicine of the University of Pittsburgh, unless otherwise stated. The facts listed in my statement are accurate, as far as I know.

NUTRITION EDUCATION IS HEARD AGAIN

The Federal support of nutrition education, at various levels and within different frameworks, has been urged and heard in Congressional Committees many times in the past. So far, the efforts in this direction have come to naught, or thereabouts.

As a concerned educator, I would like to commend Senator Schweiker for introducing the Nutritional Medical (and Dental) Education Act of 1973. Obviously, our teaching programs and our students will be the immediate beneficiaries of such an Act of Congress. But, more importantly, its benefits will be distributed to our students' future patients. Mostly, to our children and their offspring. It will pay off in "snowball effect" fashion and the dividends are immeasurably high.

I urge the Committee to consider this Act as a relatively inexpensive investment in our future. To this end I would like to say a few words on the general scope of the Act and then conserve precious time by presenting a detailed written statement on the special situation of nutrition in dental education.

SOLEMNLY NEEDED FUNDING, BUT NOT A CURE-ALL

An Act of Congress appropriating funds for nutrition education in medical and dental schools has been too long in coming. There is no question but that it is sorely needed. However, I feel I must precede my arguments in support of such an Act with two notes of caution and warning:

First, while I shall concentrate on the specific relationship of nutrition education and dentistry, I urge you not to forget the larger problem of the public's health. We must all remember and bear in mind that funds for medical and dental education are but a drop in the bucket. This Act is not going to cure the entire nutrition problem. Other legislation is necessary for that. This Act will not even solve the problem of nutrition education. It does not cover elementary and secondary schools, nor does it provide directly for public education through the media. If you have any hope that this Act could provide for educational programs outside medical and dental schools, I feel that the costs are much underestimated and spreading the programs thinly throughout will not accomplish much quality anywhere. So, let us remember that the Act as it stands now is an excellent measure for a limited objective and not a cure-all.

Secondly, I am very much concerned that these precious funds be spent on worthwhile, useful training programs. I fear lest the money be squandered on the enhancement and glorification of new or existing fundamental or applied research. On the other hand, the funds should not be wasted on ineffective and inefficient teaching. Some quality control on the extent of teaching effectiveness, in terms of student learning and motivation, as well as patient benefit (another measure of student learning), must be maintained. In other words, it would certainly be wonderful to have more money for the teaching of nutrition, but let us do it effectively, in DIRECT teaching programs and in a way that would bring the most benefits to future doctors and patients.

NUTRITION HAS AN IMPORTANT ROLE IN DENTAL EDUCATION

The connection between dentistry and food requires no explanation. It becomes painfully obvious to anyone who has dental or other oral problems. This is an experience that most of us have had. And, since all of us have to eat, this subject is of interest to everyone. The subject is intelligently discussed by some who are acknowledged as experts because they are experienced in a thorough scientific study of nutrition. There are also self-proclaimed experts who can talk about it in an unintelligent and unscientific way.

The subject of nutrition education in dental medicine has already been introduced before this Committee, in a hearing on March 5th. Professor James H. Shaw stated that:

"Much less than the needed emphasis is placed upon the teaching of nutrition to medical and dental students *** The teaching of nutrition in its basic science and applied phases is a very important facet which urgently needs strong emphasis in the dental curriculum".

Professor Abraham E. Nizel pointed out that the weakest link in our fight to prevent dental caries is: "*** the lack of nutrition education and guidance with respect to decreasing sugar-sweetened snacks and suggesting acceptable, more nutritious alternatives."

This was not the first call for an increased role for nutrition in dental education by these two distinguished professors. They, and a number of others, made a similar plea in a Conference on Nutrition Teaching in Dental Schools which took place at the Massachusetts Institute of Technology in March, 1965. The report stated that "*** it becomes necessary for (1) dentists to be skilled in clinical nutrition, and (2) dental schools to assume the responsibility of providing students with opportunities to learn modern concepts of basic and applied nutrition."

The Conference was naturally concerned with the financing of such improvements in the curricula of dental schools and concluded its recommendations by urging that "*** (6) the National Institutes of Health, other granting agencies, and industry should be encouraged to develop additional educational programs in nutrition and to support career development in this area for the primary benefit of dental schools; and (7) funds should be sought to underwrite the development of programmed instruction in the area of nutrition and dental health."

Lest anyone think that these recommendations are the biased opinions of educators in dentistry with a vested interest in programs like Bill S. 324, or that testimony heard before this Committee was the first call for such programs to be heard in Washington, I must recall the report of the White House Conference on Food, Nutrition and Health which was held in Washington in December, 1969. The blue-ribbon Panel on Adults in an Affluent Society, which was composed of eight physicians, one nutritionist and one dentist, discussed the problems of the "Degenerative Diseases of Middle Age" and concluded in its report that:

"It is essential that both the sciences and the practice of nutrition be taught as a basic course in dental schools and schools of dental hygiene.

"The purpose of this educational requirement is to provide the dentist with another preventive dentistry procedure. Personalized nutritional counseling for caries control is essential in a complete program of oral hygiene. Furthermore, the dental health team has a unique opportunity to offset misinformation about foods and diets. The dentist sees 40 percent of the population on a regular basis, more often during a lifetime than practically any other professional.

"The Panel recommends:

That all dental schools and dental hygiene schools offer an identifiable course in the science and practice of nutrition. To assure immediate acceptance of this course in the curriculum by dental school and dental hygiene school administrators, the Federal Government should provide a grant-in-aid program to set

up nutrition teaching programs in each of the schools in the country." (emphasis mine, M.T.)

The rest of the recommendations of this Panel would be more appropriate to quote in a later portion of my statement.

I have relied heavily on quotations to demonstrate that I am certainly not the first, nor am I the only advocate of:

(a) Including a full-fledged course in basic and applied nutrition in the dental medicine curriculum.

(b) Emphasizing the applied and preventive aspects of nutrition by its inclusion in the preventive dentistry operations of the teaching clinic and hospital as an equal partner with other procedures.

(c) Urging that the Federal Government provide the incentive for the development of such courses and programs by offering financial support to schools which would initiate nutrition programs.

NUTRITION EDUCATION IN DENTAL SCHOOLS IS MINIMAL

How many of the nation's dental schools include nutrition in their curriculum? How many schools consider nutrition important enough to be labeled as a distinct and full course, or learning unit? How many of these schools focus their nutrition teaching effort on the applied aspects of the subject. How many of these offer their students a sufficient and useful experience in the application of diet counseling towards preventive dentistry?

And-- what are schools of dental and oral hygiene doing in these directions? The first survey of nutrition courses in dental schools was taken in 1947. At that time, as many as twenty two of thirty five dental schools (63 percent) listed separate courses of "nutrition", with a mean length of 16 clock hours.

The 1965 Conference on Nutrition Teaching in Dental Schools stated in its report, which I have already quoted earlier, that seventeen of the forty-four dental schools surveyed at that time offered separate courses in nutrition. The most recent survey of this subject was done by Professor Abraham E. Nizel for the Biochemistry and Nutrition Section of the American Association of Dental Schools in 1968. At that time, distinct nutrition courses were offered by only about six of about sixty dental schools. The trend of a decline is obvious. This decline was probably due to the coincidence of drastic changes in curricula, which occurred in some of the seventeen schools mentioned in the 1965 survey. As a result of these curricular changes, the nutrition courses were dropped by these schools. Our school was one of them.

I believe Professor Nizel has forwarded a copy of the 1968 report to the office of Senator Schweiker.

An examination of the Directory of Dental Educators, published by the American Association of Dental Schools, is quite revealing. The 1972-73 Directory lists only fourteen educators, in eight different schools, who named nutrition as their primary teaching area. Their number was about the same in 1971-72. There was no listing for nutrition in the 1970-71 Directory. The striking point about this small number of teachers and schools is that it represents such a small percentage. The total number of dental educators listed in the 1972-73 Directory is 10,651 (ten thousand six hundred and fifty one). In sixty two schools in the United States and nine in Canada.

I must quickly emphasize that these are the figures for full-fledged courses in nutrition, with specialized full-time faculty. As I stated in the summary of the introduction, this is the least for which we should aim. This does not mean that nutrition is not mentioned in the curricula of dental schools. Most schools give nutrition the lip service of isolated lectures, or just parts of lectures, in courses of biochemistry, physiology and clinical courses of pedodontics, periodontics and sometimes even in prosthodontics. In my opinion, this minimal role for nutrition is totally inadequate.

From this point of view, the situation in schools of dental and oral hygiene is much better. In a 1968 survey, Drs. Gary S. Leske and Anthony Jong, found that all but one of the fifty six schools that responded to the questionnaires (of sixty two) had a course listed as "nutrition". These nutrition courses were also longer than the ones surveyed in dental schools three years earlier. The length of nutrition courses in dental schools ranged from 8 to 52 clock hours, with a mode of 16 hours, while those in schools of dental hygiene ranged from 15 to 72 hours, with a mode of 48 hours.

It is not quantity that we are after, of course, but quality. The quality of a nutrition course in dental medicine would be measured by its service to dentistry. This service is obviously the use of diet counselling as part of a prevention program. Only a small fraction of the schools that list a course in "nutrition" feature this practical clinical orientation. Exact data on this point were not available to me, but I have the impression that the number of schools offering this training and service is growing, but much too slowly. Obviously, financial help from the Federal Government would spark a great increase, if not a stampede of new programs. They may become just like Jonah's castorbean tree, that grows rapidly and provides a refreshing shade as long as it is supported from on high, and quickly wilt when the funds from Washington are arbitrarily cut off. Hopefully, just like the castor beans sprouting new trees after the dry season ends, most of the programs may be placed on the same sound financial basis as most dental clinic services which manage to bring the dental school good returns for their efforts and thus survive the termination of initial Federal support.

PENNSYLVANIA DENTAL SCHOOLS AS AN EXAMPLE

I have been asked by the Committee to report on the status of nutrition instruction in the dental schools in the Commonwealth of Pennsylvania. Three schools are included in this group: Temple University, The University of Pennsylvania and the University of Pittsburgh. In a quick telephone survey made for this Hearing, I found the following situation:

(1) *Lectures in nutrition* are presented in all three schools. However, at both Temple University and the University of Pennsylvania, these lectures are a part of the courses in biochemistry. This is an example of the minimal status of nutrition instruction in most of the nation's dental schools. At the University of Pittsburgh, the lectures in nutrition are considered as part of the clinical biology sequence, but follow the biochemical approach to the cell biology sequence. In all three universities, these lectures take about ten to fifteen clock hours and are presented during the first (freshman) year. In all three cases, the lectures are presented by biochemists with an interest in and knowledge of nutrition, but not by nutritionists. This is also typical of the situation in most schools of dentistry. In all three cases, the lectures in nutrition are given before students see their first patients and are partially oriented toward practical applications. The lecture sequence at our school emphasizes the most common aspects of clinical nutrition (like obesity, coronary heart disease, needs in growth and old age), but devotes almost half the time to dental applications (caries and gingival disease, problems in denture patients and dental surgery).

All three schools have oral hygiene programs. All these programs offer courses in biochemistry and nutrition. However two out of three (The University of Pennsylvania and the University of Pittsburgh) also offer separate, distinct courses in nutrition.

(2) *Courses labeled "nutrition"* are offered in two of the three oral hygiene programs in Pennsylvania, as I just mentioned. Again this is typical of the national status of nutrition in programs of oral hygiene.

The dental students in one of the three schools (The University of Pennsylvania) are offered a course called "nutrition", but it is an elective course that is not offered every year and is a traditionally general and biochemical course of academic but not practical interest.

(3) *Nutritional counselling* training and services in the clinical or hospital setting are offered by one of the three schools (The University of Pennsylvania). In this school, there are three separate, parallel and apparently independent preventive dentistry programs:

(a) The "Interceptive Preventive Clinic", which cares for children and teenagers (Department of Pedodontics and Orthodontics) and, therefore, deals mainly with caries and caries control. This program does not now offer diet counselling for caries control, but—I have been told—will do so beginning this Fall. This counselling will be performed by teams composed of one dental student and one oral hygienist. This is my opinion is a most desirable setup.

(b) The oral hygiene clinic has already been offering a diet counselling service within its preventive dentistry program and together with oral hygiene instruction. As mentioned just before, this service will be combined with that of the Interceptive Preventive Clinic.

(c) The "Disease Control Unit" operates within the Periodontics department and requires all students to control their own plaque and improve the health of

their own gums, before they do the same for their patients. Here again, diet counselling (specifically for gum diseases) is not offered at this time, but is planned for the next Academic Year this Fall.

In all three programs, the counselling methods of Professor Abraham E. Nizel are being used or will be used. One school (Temple University) has been offering training in diet evaluation as a diagnostic tool, following lectures on nutritional needs and deficiencies for the past four years. This program does not include a dentally-oriented counselling or any effort to modify the eating habits of the patients. At the University of Pittsburgh, the First Year dental students have been receiving a sequence of lectures for the past two years, as previously mentioned. The oral hygiene and dental assistants students have been offered two courses in nutrition for the past eight years. One course emphasizes the biochemical basis of nutrition, in parallel with a course in biochemistry, and the other concentrates on the practical applications of nutrition knowledge, particularly to dental problems. To date, these courses have not been followed up with training in actual diet counselling, but plans are being drawn up for such a program.

HOW NUTRITION FAILED IN DENTAL SCHOOLS

The foregoing discourse showed that nutrition courses, once prevalent in dental schools, declined in the late fifties and early sixties but are undergoing a slow revival at the present time. The reasons for this process may be useful for understanding (1) the problems encountered by faculty, and (2) the reasons for the present approach to nutrition teaching in dental schools by most of us who are trying to develop the kind of nutrition courses that would be useful and successful.

These problems are shared, to a great extent, with nutrition teaching in the medical schools. Some of the problems are connected with the general upheaval on our campuses.

(a) Nutrition courses have become more and more academic, theoretical and research-oriented. As a result, they have become more like specialized biochemistry courses. They concentrated more and more on the biochemical aspects of the requirements for various nutrients, on interesting but rare studies of inborn errors of metabolism and on the most intricate and unusual cases in clinical nutrition.

(b) Students considered these involved science courses as boring and irrelevant. These courses did not seem applicable to the average, run-of-the-mill, cases of daily private practice. These courses seemed too remote from real life to be useful. No attempt was made, in most cases, to involve nutrition in either the diagnosis or the treatment end of the dental clinic. At this point, please note that the bored and alienated students of these courses constitute the bulk of the present faculty of dental schools. These faculty members are often in responsible administrative decision-making positions and may be the main obstacle to the acceptance of applied nutrition as a tool of (preventive) dentistry.

(c) Even to this day, after nutrition courses have been made more relevant and applied, most of the teachers presenting courses of nutrition in dental schools, or schools of dental hygiene, are not dentists or dental hygienists but nutrition researchers and home economists. Most of these instructors have not been trained, or indoctrinated, in the application of practical nutrition to dentistry. As a result, most of the nutrition courses emphasize general nutrition, hospital diet application or theoretical aspects, but not the application to dentistry.

(d) At the same time, the post-"Sputnik" surge in basic research and the space race, brought on a two-pronged distraction that put nutrition out in the cold. Basic research in physical chemistry, organic chemistry and biochemistry was generously funded and brought on a race for research grants, promises of miraculously rapid "cures" for every ailment and glamour to basic research. Space-age technology arrived in the dental clinic, bringing promises of better, easier and faster treatment of existing ailments. The trend became that of saving the ailing teeth and gums at all costs, with more heroic and less tested procedures. As a result, nutrition fell into disfavor.

A "REBIRTH" OF NUTRITION COURSES?

Have the nutrition courses in dental risen again, like the phoenix out of its ashes? Are these courses now reincarnated in a different form, like the Hindu souls of man and animal?

The answer is apparently "yes", though I could not support it with facts and figures. But it becomes quite obvious to an observer of the scene that:

(a) A small number of dental schools (about six to ten) are now offering new courses in nutrition.

(b) What is new about these courses is that they are of a more practical nature and contain an emphasis on the application of nutrition to dentistry.

(c) In some of these schools (maybe four to six), the nutrition courses focus on and revolve around actual diet counselling services for clinic patients.

(d) This refreshingly new approach is an aspect of the growth of interest in preventive dentistry and its actual practice in the school clinic and/or affiliated hospital services. The development of a preventive dentistry facet in the curriculum and the clinic seem to precede nutrition teaching in its applied form. I believe that there are several schools like ours, with preventive dentistry teaching and services, which do not include nutrition (or diet counselling) as one of the preventive methods.

(e) Whether the few schools which have dentally and preventively oriented nutrition courses and counselling services actually attain the educational and clinical aims of their courses is unknown (to me). As far as I know, none of these programs include a sound, scientific and objective quality control procedure that would report their effectiveness.

SUMMARY: LEARNING FROM PAST MISTAKES

There is no doubt that there is a relationship between nutrition and oral health. It is natural, therefore, that nutrition should be a vital part of the curricula of dental schools. This is apparently not the case in most of the nation's dental schools. On the other hand, most schools of dental hygiene offer their students a hefty portion of nutrition in their instruction. The present situation in dental schools is the result of a downward trend in the position of nutrition in the curricula. It seems that, in most dental schools, nutrition was deemed irrelevant to the reconstructive and curative philosophy of instruction and practice.

The advent of a preventive approach to dental practice opened a most natural and appropriate role for nutrition instruction and practice. Existing and projected preventive dentistry programs within dental schools, school clinics, hospitals and community outpatient clinics are the most natural places for the application of whatever present know-how we have in nutrition. I believe that the role which nutrition can, and must, play within the framework of preventive dentistry programs should be in the form of diet counselling. This mode of operation pays off in benefits far beyond the immediate results to the counsellor and counsellee.

A SELF-PREScribed PROGRAM FOR NUTRITION INSTRUCTION IN THE DENTAL SCHOOL.

On the basis of my observations, the experiences of other instructors in other schools, my educated estimates of what would work best and what would be most acceptable to potential participants, I suggest that a good program of instruction in the dental schools should include the following features:

(1) A minimal number of lectures and a maximal amount of actual counselling practice, coupled with group discussions of the cases and their handling.

(2) Programmed instruction should replace some of the lectures. Both methods should be used and they can best complement each other.

(3) The lecture and instruction content should concentrate on:

(a) Practical applications of nutrition.

(b) Human needs, emphasizing conclusions from studies on humans rather than animal studies.

(c) Relation of diet to oral health, with particular emphasis on the use of diet "therapy" or modification of eating habits for plaque control.

(d) Special nutritional problems in the most common ailments (coronary heart disease, diabetes) rather than in unusual or rare metabolic diseases.

(e) Special nutritional requirements in pregnancy, child growth (particularly during the period of eruption of permanent dentition), old age (especially in edentulous patients and denture wearers) and oral surgery.

(4) The course instruction should contain a minimum of:

(a) Research data, particularly studies on animals.

(b) Biochemistry, which should be presented as a prerequisite, prior to the nutrition course and with the nutritional implications pointed out in it as much as possible.

(c) Theories, hypotheses and conclusions which are not accepted by most nutritionists as "hard" facts that are based on sound conclusive data.

(d) Information on unusual, rare and exotic metabolic diseases, no matter how interesting they may be to the academic nutritionist, physician or biochemist. However, this point should be modified according to regional needs. For instance, the once common vitamin deficiencies that are still encountered in the developing nations of the world are too rare to emphasize in most parts of the United States.

(5) The practical experience should emphasize diet counselling, using a non-directive technique and adapting Nizel's procedures as much as possible.

(6) The set-up for diet counselling should be separate from the operative clinic and its chairs. Physical plant facilities should ideally provide small rooms or cubicles with privacy and conducive to a relaxed atmosphere. For the best use of audio-visual equipment that may be available in the school (sound recording or closed circuit TV), the rooms should be equipped with appropriate facilities, even a one-way observation window.

(7) A most desirable situation would be the team work approach, in which a dental student teams with a student in oral hygiene and/or a student in diet therapy or dietetics or home economics.

This team approach has been recommended by the 1969 White House Conference on Food, Nutrition and Health Panel on Diseases of Middle Age in the following terms:

"* * * 2. Training programs for dietitians and nutritionists include experience in a dental school or clinic. There is great need for team teaching at the community level where people who are either malnourished or undernourished can be helped by a physician, dentists, nutritionist and social worker. The dietitian or nutritionist, to recognize and understand the dental and oral problems associated with poor diets, must be provided with a rotation in a dental school or dental clinic during the dietetic internship." * * *

That such a team approach, crossing school boundaries, would be most beneficial to both parties, as well as the patient, must be obvious. To the Panel's recommendations I might add one of my own, namely that a rotation in the dental school clinic might be beneficial for medical students in their first or second year. This rotation might include the diet counselling service, since the opportunities for it in a dental clinic are better than those in the hospitals, in terms of the preventive approach and patient motivations. Rotations that may benefit medical students are in the oral diagnosis, periodontics and oral surgery departments of the dental clinic. Team work of medical and dental students may be a worthwhile learning experience for both.

One aspect of this recommendation of the Panel should not be overlooked, though it was not mentioned. This sort of cooperative effort should not increase the cost of instruction. In fact, with a little goodwill on both sides, it may save some money.

(8) In all the features suggested here, it was implicit that nutrition will be a part of a preventive program. That is, it should become just one of the measures used to control caries and gingival disease. On the other hand, it should become a sort of "equal partner" with all other preventive procedures. The degree of emphasis of any one measure for prevention should (ideally) be adjusted to fit the particular needs, problems and capabilities of each patient and not be an arbitrary outcome of the inclinations of the clinic staff.

(9) One of the manifestations of the serious, business-like status of diet counselling should be a free charge for this service. This is an interesting facet of the problem that bears on entirely different legislative activities.

Since a growing part of medical costs is being paid by a third party (medical insurance, union medical protection plans, Medicaid and Medicare) we have to add the following question: Who will pay for preventive medicine, preventive dentistry and diet counselling? Today, none of the medical insurance programs include payments for prevention, only for cures.

Again, the 1969 White House Conference on Food, Nutrition and Health, Panel on Diseases of Middle Age had a direct recommendation to the point:

"* * * 3. Proper status and financial reimbursement (fee for service) be given for providing nutritional counselling service in dentistry. Either public or third-party payment services like Medicaid, dental service corporations, and private health insurance companies should include this service in their approved fee schedule."

This recommendation was made four years ago and, as far as I know, no movement in this direction has been made to date.

(10) Realistically speaking, we should not expect any relief in the fee payment for this or other preventive procedures in the near future. While we should insist that the patient pay a fee for the service, it may be a small fee. The cost of the nutrition counselling services should then be subsidized by this Act, or—better yet—by a separate supplementary Act.

(11) A nutrition course culminating in a diet counselling experience, particularly in a team with auxiliary health personnel, will result in:

(a) introduction of dental students to a potentially useful tool, profitable office procedure, indoctrinate them in a practical, viable preventive approach and induce them to employ it in their private practice. Their interaction with trained hygienists and nutritionists in this setting will develop mutual trust and respect and

(b) train auxiliary personnel to perform the counselling services in the dentist's office, the community clinic, the schools and other settings, alone or as a team.

(12) Both oral hygiene students and dental students should have some experience in instructing groups of children and/or adults in good nutritional practices and in fielding questions from the public on nutritional problems and myths. This could be done within various settings and programs: (a) School lunch talks; (b) School class discussions; (c) Neighborhood clinics; (d) Clubs and organizations, such as "senior citizens"; (e) Dial-a-Diet telephone services; and (f) County fairs and town fairs.

Part of the costs of such programs should be defrayed by the Act.

(13) Ideally, the degree of success (or failure) of the program should be monitored by objective standard quality control methods. Unfortunately, there is not enough experience in doing this sort of thing in a nutritional counselling program or in a dental clinic in general.

It is relatively easy to monitor the efficiency of the instructional program in increasing the students' knowledge, as well as the changes in their attitudes.

It will be quite another matter to monitor their performance in diet counselling, the immediate goal and product of the program. I believe that experience and agreement in this area are so sparse, that some groundwork research is necessary. This research is essential because we must have an objective, scientific method for answering the most difficult question about our programs—namely: "How good are they?". How effective are such programs in terms of patient education, compliance and health?

SUMMARY: EDUCATIONAL POTENTIAL IN DIET COUNSELLING

The prescription for success in nutrition education in dental schools is based on a strong emphasis on its practical aspects, applied to preventive dentistry. This program of instruction culminates in actual experience in diet counselling to individuals in a clinic setting and instruction of small groups elsewhere. The immediate benefits of such a program are in immediate dissemination of nutrition information by the students to the public, modification of the eating habits of several persons, endless possibilities for interdisciplinary cooperation and teamwork of students in dentistry, medicine, oral hygiene and diet therapy. Later benefits will accrue from the continued and more widespread use of diet counselling and other kinds of counselling in doctor's offices, schools, clinics, etc.

A major financial obstacle to the growth of this service, and other preventive measures, is the lack of provision of fee payment by third-party arrangements. This is a difficult and separate issue which deserves serious consideration by the committee in a separate hearing, with testimony by the appropriate experts and bodies or corporations.

We shall have some difficulty in measuring the effectiveness of the diet counselling training programs. I feel that some serious and intensive research in this area is warranted. It will be essential to maintain a quality control check on this product, which is, after all, a public service.

Dr. THEINER. I would like to highlight the summary or conclusions of my report. First of all, before talking about what ought to be done, I would like to caution you about two points that ought to be borne in mind before we proceed to do anything.

First, nutrition education in medical and dental schools is not going to be a cure-all: this is obvious. I don't think there is any disagreement on that. There are other channels of education that must be utilized: just teaching and training the future doctors and dentists is not going to cure public ignorance of nutrition. Obviously, mass media can be utilized, and so forth.

In a parenthetical statement to this must be added that dental decay, for example, is a complex disease, much like diabetes and coronary heart disease, and it cannot be solved by a simple solution.

We have for too long now been hoping for cure-all, that out of the research laboratories will come a panacea (cure-all) that will cure all kinds of cancers and dental decay and all kinds of coronary disease. This, unfortunately, is not so. As was pointed out by Dr. Navia in his testimony on March 5, the solution will be complex. It isn't just nutrition alone, but other things as well, so let's not expect a cure-all out of this.

Second, if this bill comes to pass, in the form of actual appropriations for nutrition education in medical and dental schools, we must be very careful to monitor, as I can see, two things:

First of all, that the money invested should go into the most efficient way of education. And second, that there should be a monitoring on what this efficiency really is, how effective is it. Unfortunately, this is an area of education that is neglected in some quarters.

I will read just a quick summary of what I wanted to say here. There is no doubt that there is a relationship between nutrition and oral health. It is natural, therefore, that nutrition should be a vital part of the curriculums of dental schools. This is apparently not the case in most of the Nation's dental schools.

On the other hand, most schools of dental and oral hygiene offer their students a hefty portion of nutrition in their instruction. The present situation in dental schools is the result of a downward trend in the position of nutrition in the curriculums.

It seems that in most dental schools, nutrition was deemed irrelevant to the reconstructive and curative philosophy of instruction and practice. The advent of a preventive approach to dental practice opened the most natural and appropriate role for nutritionists in instruction and practice. Existing and projected preventive dentistry programs within dental schools, school clinics, hospitals, and community outpatient clinics are the most natural places for whatever present know-how we have in nutrition. I believe that the role which nutrition can and must play within the framework of preventive dentistry programs should be in the form of diet counseling. This mode of operation pays off in benefits far beyond the immediate results to the counselor and counselee.

PREVENTIVE DENTISTRY

I have given this a great deal of thought and would like to propose a prescription for success in nutritional education based on its strong emphasis in practical aspects applied to preventive dentistry.

Emphasis on general aspects of nutrition in dental schools would not work. The faculty and students would not accept this. You must concentrate on preventive dentistry, specifically, and on dentistry in general. This program of instruction culminates in actual experience in diet counseling for individuals in a clinic setting and instruction of small groups elsewhere outside of the clinic setting. The immediate benefits of such a program are immediate dissemination of nutrition information by the students to the public, because it is the public that benefits from our dental clinics:

Modification of eating habits of several persons, endless possibilities for interdisciplinary cooperation and teamwork of students in dentistry, medicine, oral hygiene, and diet therapy. Later benefits will accrue from the continued and more widespread use of diet counseling and other kinds of counseling in doctors' offices, schools, clinics, et cetera.

At this point, I would like to interject and try to head off the question as to why it is that dentists have not used nutrition and why aren't they using it now. As I have pointed out, they have not used nutrition as long as they were thinking only of curing.

Now dentists are beginning to think more and more in terms of preventive dentistry. And it is my impression that the dental profession is a little bit ahead of the medical profession in this aspect, in actually practicing preventive dentistry. And it is my impression that the reason for that is simply, however cynically, money. Dentists can actually see a profit in preventive approach to dentistry.

For some reason—I don't know why—the public seems to be more amenable to accept preventative approach in dentistry than in medicine. People are willing to pay \$40, \$50 for preventive procedure in dentistry because the dentist told them that if they do this, that it will decrease the chance that they will have to pay later for dental repair work, that they will have to suffer later toothache, and so forth.

Senator SCHWEIKER. What kind of preventive care would this be?

Dr. THEINER. Preventive care like this includes instruction in oral hygiene, mainly brushing and flossing, by proper procedures.

Second, it includes prophylactic treatment with fluoride (topical fluoride), especially with children. You have five children, Senator.

Senator SCHWEIKER. We have had several—

Dr. THEINER. I hope you are using this procedure, too.

Third, there is a new procedure called a pit and fissure sealant. It is a plastic material used in children who have very deep pits in their molars where they get the first cavities in their deciduous or first set of teeth.

Last, but not least, diet counseling. The business of relationship of sucrose and dental cavities is, I think, pretty well sewn up. It is pretty clear.

Senator SCHWEIKER. I might say, too, I agree here that I have heard that from my dentist. My dentist even years ago was telling me about that. So I think here is an area where they have practiced preventive medicine.

Dr. THEINER. Right.

Senator SCHWEIKER. I suspect my dentist, in fact—I suspect they are not the exception, they are probably the rule.

Dr. THEINER. Yes, pretty much so. Unfortunately, somehow, nutrition still got left out of the picture while it can play a great role in preventive dentistry. There are two obstacles that might stand in the way of doing something like that in dental schools:

First is the question of who will pay for preventive work. The question came up already with medical prevention: "Who will pay for this? What about third-party payment for preventive work?" This is a matter that should come to the attention of the Congress, and it should be talked about and should be discussed, and some way should be found to take care of this. As far as I know, there is no medical insurance program that will pay for preventive procedures in dentistry.

There is now a new corporation that is being set up in Pennsylvania, which pioneers in this respect. It will pay for preventive dentistry. In fact, this is its major interest: to pay for preventive dentistry, because they are betting on the preventive ability of this procedure.

The second problem, is as I pointed out, that to train the dental students in the practice of nutrition, to tell them in lectures is not good enough. You have to train them how to do it. Just as they are trained in their practice of dentistry in a clinic, they should be trained in diet counseling.

There is also a problem in clinic work and practical training. How do you measure its effectiveness? This is an area into which money should be invested, to find out what is the best way to do this measurement. I don't know if this is appropriate to do in legislation or not but maybe it should be required that the effectiveness be measured and that the school which receives the money must report how effective the nutrition teaching was.

This concludes my statement, Senator.

Senator SCHWEIKER. All right. Thank you.

CLINICAL OBSERVATIONS

All right, Dr. Thompson, I have a few questions I would like to ask you. As I understand your statement, you believe medical students have an opportunity, under the traditional curriculum, to learn about basic nutrition, but they are lacking training in specific applied nutrition; is that what you are saying? Or maybe—

Dr. THOMPSON. No, I don't even think it is learning basic nutrition. I think it is much more related and limited to more pure biochemical physiological situations, and they really don't even deal with the basic nutritional aspects, let alone the translation of those to patient language.

Senator SCHWEIKER. I don't know if you heard Dr. Schultz's testimony this morning or not.

Dr. THOMPSON. I read it earlier.

Senator SCHWEIKER. What I would like to get from you, Doctor, is the structure of nutritional education in terms of your ideas here. I have been—I have a bill in that does not structure the approach the way Dr. Schultz suggested, and I am very openminded on this. I just wondered what your thoughts of structuring nutritional education in medical schools is.

Dr. THOMPSON. I have a feeling, Senator Schweiker, that there are only several areas in the practice of medicine where nutritional education as presented to patients might be realistic and have a payoff. One of those, as I have indicated, is in the area of obstetrics and prenatal care. I see a very, very large potential payoff there. I see a potential payoff in pediatric area up into early adolescence. I see some, but a lesser, payoff in caring for people who have a disease, usually a chronic disease, which has nutritional therapeutic implications, such as diabetes, ulcer, liver disease, certain things of that sort. I am not terribly convinced that ordinary healthy people who are 35 years old and see their physicians in any setting, are going to be very responsive to a change in diet or a pep talk from him or whatever.

Senator SCHWEIKER. Wouldn't that relate a little bit to the disease? For example, in our hearings on diabetes, one of the key research things they are looking for is genetic trigger on diabetes. If we could isolate, and there was some thought about the kind of isolated experimentation, if we could isolate the diabetic gene and identify it and say, you know, given 40 years, you are going to be a diabetic, that would be a pretty strong incentive, I think, to cut out sugar.

Dr. THOMPSON. I think it is a good theoretical incentive, but we can point to cigarette smokers. They are 22; we can say if you continue to smoke and inhale this way another 40 years, you are going to have lung cancer; and they have kept smoking really. The picture really hasn't changed. It is very hard to motivate people about "maybes" in the future.

Senator SCHWEIKER. Except with diabetes you have a hereditary factor and chances are one of their parents died of diabetes, so you have something they may well remember and experience as a forerunner of what is going to happen to them.

Dr. THOMPSON. Yes, I don't—

Senator SCHWEIKER. I mean it depends a lot on the circumstances. I agree about your motivation. I am not disagreeing with that.

Dr. THOMPSON. Right. It's obviously possible and should not be forgotten. But I think distinct payoffs can come rather quickly in prenatal care, pediatrics, early adolescence, and certain chronic diseases that already exist. I would therefore focus my medical nutrition education in those areas and equip the medical students and the residents to deal appropriately with the nutritional aspects of those situations in their future relationships with people and with patients.

Senator SCHWEIKER. Right into that departmental—

Dr. THOMPSON. Right into that departmental picture at a clinical level so that for instance for our obstetricians, our residents, medical students, they are very concerned with blood pressure, they watch patients' blood pressure through pregnancy. We can observe that and measure it, we know certain things about it.

That is a clinical observation, has a clinical interest. We need to put nutrition into the same kind of concern category for them. It's got to be very real and very clinically oriented as I see it. Therefore, I don't think that to have separate departments even with the theory that they are going to have horizontal relationships so-called into other departments and so forth can really make it. I think that it's got to be clinical and meaningful to the doctor. To me the way to do that is to put it right into the department level.

Senator SCHWEIKER. Do you want to comment on that question too, Dr. Theiner?

Dr. THEINER. Yes, I would like to explain what is happening here. This is a general problem of nutrition information. Sometimes we speak of "hard" and "soft" research data. By "hard" we mean something that had been proven beyond a shadow of a doubt and the great majority of scientists in the field would accept it.

"Soft" data is the opposite, of course, the kind of information on which there is great controversy. Right, doctor?

Dr. THOMPSON. Right.

Dr. THEINER. Unfortunately most of our nutritional research data are of the "soft" kind.

Senator SCHWEIKER. Particularly in this country. It seems other countries have done more nutritional research, I believe, than we have.

Dr. THEINER. Yes and no. They have done different kinds, but again, there is the same problem. The question, what is "soft" and what is "hard," will depend upon what your particular scientific interests are. You have mentioned several names of people—

Senator SCHWEIKER. Who are in the "soft" area, probably. Caries are in the "hard" area by your definition.

Dr. THEINER. Yes, sir; there is no question about this and I feel fortunate in that. That is why I concentrated on the dental schools. That is why I say that in the dental schools we ought to concentrate on this particular area, not bother too much with the "soft" area which has a lot of "maybes" in it.

A byproduct of this has been that, because of the soft nature of most of the research data in nutrition and the great degree of disagreement among experts, the confused public finds refuge in food faddists who have absolute, determined, one-way ideas. "If you do this, it will cure every disease you have." "If you eat . . . (whatever it is that they are pushing) it will cure every disease you have."

Senator SCHWEIKER. How about an apple now, we are not talking about apples?

Dr. THEINER. This is interesting. I am glad you brought that up, Senator, because the saying, "An apple a day keeps the doctor away" is ascribed to a man by the name of Sylvester Graham, who was the inventor of the Graham cracker, the founder of the American Physiological Society, but also the founder of American food quackery in the late 1780's.

We should be celebrating his bicentennial these days, I think. The fallacy in that apple-a-day idea should be quite obvious. But there are a lot of myths in which a fallacy is not too obvious. I hope I didn't stray too far afield from that, as I tried to explain why there is such a large area of soft information.

This is the situation in the dental schools. My recommendations center around emphasis on preventive dentistry in its service to prevent dental decay and gum disease, both of which are diseases of deterioration of tissue.

The second point is the way we practice it in the clinic, in all the departments. Each department does it a little bit differently. This is because we know that in order to care for patients with different needs and problems and requirements, we have to treat them in a slightly

different manner. Especially the diet counseling is done a little bit differently for every different problem.

Senator SCHWEIKER. Dr. Thompson, here is another question. In terms of the concept that you have nutritional education in schools, would a lot of newly trained specialized personnel be required, or would your concept pretty well enable you to launch a nutritional education program in medical schools within the structures, how would you prime the pump in this area?

Dr. THOMPSON. Pretty well within the structure. In our own department, for instance, we would take Mrs. Kolodner, who is an excellent nutrition consultant for us now but only a limited period of time. And she would join us, with her assistance and perhaps one or two nutritionists who would talk with the patient, we would put time into this and impress upon the medical students and the residents, but primarily the medical students, the importance of considering the dietary history and what is really happening back at the kitchen table or dining-room table for this particular patient.

Going into her history, analyze her situation, and then approach her appropriately. Once you take the route of establishing a nutrition center or whole department of nutrition, you build a very costly kind of base, and then I think you have problems disseminating the information and the approaches that that base wants to disseminate simply because we don't really pay an awful lot of attention to what goes on in other departments.

The medical students know that there are social service workers but they are really in another department and, therefore, somewhat ignored. It's happening now but traditionally they haven't really related to them. Most clinics in teaching hospitals have something called nutritionists or dietitians. And certainly they exist within the hospital for inpatients. Medical students and doctors can just point the patient toward the dietitian and whatever happens will happen but the student and doctor will really not know and really not learn from that. It's got to come from a department, presented by the faculty that he respects because not only do they understand about nutrition but they know to convert a breech obstetrical lie to a vertex and so on.

THE RELATIONSHIP BETWEEN NUTRITIONISTS AND DOCTORS

Senator SCHWEIKER. I wonder if you would explain a little, Mrs. Kolodner, what your role is. I think it would be interesting to the committee to find out what your role and function is in the area you work, particularly your relationship with the doctor's work.

Mrs. KOLONNER. Yes, presently I have been consulting 2 days a week at the medical care center at Magee-Women's Hospital. One of my first responsibilities was to evaluate what nutrition education was being offered in the medical care center to patients, and to staff. Now in trying to look at what is going on there, one of the first observations I made was the fact that the only nutrition education that is being given on a regular basis was being given by a nutrition aide who had been trained by the county health nutritionist.

Now the county health nutritionist, as you may expect, is responsible for some nine such clinics to do consulting, but most of these clinics do have a nutritionist on their staff. The center at Magee-Women's Hospital does not. It has a nutrition aide who is a person

from the line staff who has been trained in some way. It was quickly evident to me that I think Dr. Thompson's observations were quite true. The patient is headed in the direction of the nutrition aide when the doctor feels as though she "isn't eating right." This may be on the basis of a hemoglobin level that doesn't look right to him and blood pressure, on the fact that she's "gained too much weight." This is as he stated "variable."

Senator SCHWEIKER. Isn't it proper to gain weight not—we went through that cycle—I gather from the doctor's statement that we are back on the theory you ought to be fat and happy now.

Dr. THEIXER. Absolutely.

Mrs. KOLODNER. Absolutely not. We didn't say fat. It depends on what you gain.

Dr. THOMPSON. The Senator and I have our own personal definitions of fat.

Mrs. KOLODNER. I am sure you do.

Senator SCHWEIKER. Male chauvinists as you can imagine.

Mrs. KOLODNER. I think it would be a difference in point of view. In any case, in looking at this it was quickly evident really that the doctors as soon as they could get rid of a problem patient, would, I mean either refer them to the nurse or to nutrition aides. It was evident also very little I should say, of the medical information they are getting pertained in any way to what this patient ate normally.

You know it is just lovely to hand out a 1,500 calorie diet that has 3 meals a day, but when this woman doesn't get up until 10 o'clock and has a couple of kids running around the house and snacks all day and maybe or maybe does not cook a supper, eating patterns are different as they are for every family.

But there was no interest, you know, no feeling at all for the fact that we have patients who come from middle class white neighborhoods, we have patients that come from the black community, we have patients that come from the student community which includes Indonesians, Indian students, you know, no recognition at all that there might be a difference in eating patterns in these groups.

And also I think as much help as we may try to give a nutrition aide, she also is at a loss on some of these problems. So you know two of my responsibilities then:

To evaluate this service and to ask now what do we do. And I made proposals to the hospital and to the department, that indeed we did need some more information given to these patients in a different way.

It is still my conviction that the physician remains the principal change agent that many patients listen to because of our inculcation of who is the primary source of information, who is the person that really knows and that these physicians were getting very little incentive for patients to either improve diet, restrict diet, or whatever the prescription might have been.

The other thing that was interesting to me was that once the patient had been given over to the nutrition aid, the doctor was really not very much interested in following up with what happened. He made very little correlation between the outcome of that pregnancy and the patient's pregnancy nutritional status or delivery status, what happened to her after she left the acute care delivery system.

So that it was proposed that we get some more nutrition education into the clinic through the physicians, that we would have to train medical students to be apprised of what was going on to have a better insight into what role nutrition has in pregnancy; and to give them some indoctrination about the diverse backgrounds and the way you translate this into food.

Now I am trying to put together at the present time a program for the third year medical students who do spend some time at the hospital. This will be a tape plus some slides and lecture materials. I think that if we could get to the physicians, the resident physicians, as well, I think that they would know how to use nutrition information to promote health.

Furthermore, I think patients would be much better served than what they are now.

Dr. THOMPSON. We just don't know as doctors, Senator, how to do this. And therefore we ignore it. We have not been taught. And we have got to break that cycle. Once we are taught, we can deal with it, I think, very nicely. And a few do. It is not a terribly time consuming thing or anything else in the patient relationship. It just requires some knowledge.

Senator SCHWEIKER. Incidentally, Doctor. I was very interested in your statement that said out of 22 junior medical students questioned, only one knew how much protein there is in a quart of milk. Our select committee will soon be holding hearings in Washington on the prenatal-early childhood aspects of nutrition, which ties in exactly with what you are saying, and was very much on target in terms of some of our thoughts.

Dr. THOMPSON. Those 22 students you realize were at an unnamed medical school. [Laughter.]

Senator SCHWEIKER. An anonymous medical school, OK. Let's see, I have a couple more questions here yet. There are a lot of, I guess this applies to both dental and medical students, there is a lot of competing claims and competing attention-getters on the time of the medical and dental student.

I guess the question is how could a program on nutrition such as you gentlemen envision be coordinated in a way that we don't overburden the student? I suspect a lot of different groups' interests have—want to put an input into the medical dental education national curriculum and I suspect that is always a problem.

So are there any ideas that either of you have in terms of doing this in a way that we get acceptance in terms of the medical dental faculty that you work with? I am sure it is one of the problems to begin with, but second that we don't overburden the structure in a way that I am sure you have many competing interest groups coming in trying to do exactly that.

Do you have any ideas, Dr. Theiner, we will start with you on that and then go to Dr. Thompson.

Dr. THEINER. Yes, this is indeed a problem, Senator. As I pointed out, inservice training or better yet indoctrination of the faculty is an essential prerequisite to launching any kind of a program like this.

A faculty that have been trained and fallen into a habit of thinking in curative terms are not going to change into preventive dentists overnight. You have to work at it. But in our case it seems kind of

easy, because nutrition diet counseling falls right into the preventive dentistry treatment.

Senator SCHWEIKER. Do you think, Doctor, that another part of this question is, in terms of the colleagues that you work with, is it a matter with them of convincing them of, say, the merits of the case in terms of what you have espoused here today, or as a matter of just mechanically structuring with them the time and the way to do it?

In other words, is there basic convincing and sales job involved with your colleagues or is it more a matter of structuring and finding time in their busy professions to work it in in a meaningful way, which is the problem?

Dr. THEINER. It is a little bit of both. And there is, of course, the universally sore subject of where do we get the money to do this. We need some auxiliary supporting staff to do this, where do we get them?

It certainly would be nice to have a nutrition expert like Mrs. Kolodner on our staff. But we can't afford it.

Senator SCHWEIKER. She is available, I bet. [Laughter.]

Dr. THEINER. I doubt that.

Senator SCHWEIKER. So there is an economic factor right off.

Dr. THEINER. It is an economic factor. But the problem is as the same as in teaching the students. That is, you have to show them immediately that it is a worthwhile thing. Unfortunately, most people are kind of cynical today and you have to show them that they can make money on it.

Now, you are familiar with Dr. Nizel's ideas. He testified before the committee.

Senator SCHWEIKER. Right.

Dr. THEINER. I had Dr. Nizel come in for 1 hour in my course to speak to my students, after they have already heard me. I introduced him to them as my teacher. Actually, I learned from him and I am proud to be his disciple, so to speak. What do you think was the first question they asked him?—"Doctor, if I devote some of my practice to preventive dentistry, specifically in counseling, could I see a profit?"

The answer is that the few dentists who actually do this like Dr. Nizel, anywhere from 40 to 60 percent of their practice is preventive dentistry with diet counseling included, and you can see an immediate result there.

You can see an immediate result in terms of the doctor, and you can see an immediate result in terms of the patient. Because the problem in nutrition counseling is twofold: It is dissemination of information, getting information across of which we heard all morning. The second point is motivation. How do you get the patient to do this? This we cannot teach the students in lectures. They have to learn it by doing it.

And the motivation—how to motivate each patient has to be done individually, because every person will be motivated differently.

Senator SCHWEIKER. Dr. Thompson. I will give you a crack at both of those questions.

Dr. THOMPSON. Yes, I would think that it could be worked into the curriculum very nicely without getting into this time competition that you talk about and I really would work it into the curriculum in obstetrics and pediatrics primarily, at least in the beginning.

And I think there everyone is clinically concerned and clinically interested and to a certain extent does something with it now. But we, speaking for the obstetricians at least, don't really have a very good working knowledge ourselves of nutrition, and we are not as comfortable about teaching it as we ought to be.

And we need Mrs. Kolodner to help us learn and stimulate and motivate us. I would think of combining—we also do not obviously in teaching a potentially cross departmental subject like nutrition want to put the students into a lot of repetitive lectures and so forth. So I would approach pediatrics and obstetrics as one nutritional bridge.

We would have one Mrs. Kolodner working back and forth with the faculty of both departments and introducing them to the clinical teaching where it slides easily, where it seems to have relevance and where to some extent it is already happening but really not at the level that it should.

The other areas of therapeutic dietetics for diabetes and gastric ulcer and liver disease I would leave in the department of medicine. They are doing pretty well with that already.

I don't think that needs to be tapped. But these two areas do, then I would be happy, for the moment at least, to let all the other concepts of preventive dentistry rest in the hands of the dentists. They can give information about not only protecting the teeth but preventing diabetes. I would assume good dietetics for the teeth is good dietetics for the rest of the body.

That would be maybe a kind of simplistic way that I would go at it, which should not cost a lot of money, which ought to have rapid and effective acceptance in clinical application.

Mrs. KOLODNER. I have not been asked for rebuttal but I see my friends in the dietetics profession sitting there. I guess for expediency that that is the way to begin. I don't think it has as little relevance to the other areas of medicine as has been said.

Certainly is it my function at this moment in time to be doing teaching in the department of medicine, surgery or the department of nursing and other places? One of the things I have observed in my consultantship at McGee Womens Hospital and Clinic is even how much help nurses and other paramedical personnel need interpreting nutrition information to patients and how much information is lacking in those areas of medicine.

I have worked in rehabilitation as well and I am always shocked at the little information that physicians in rehabilitation, for instance, have about the curative aspects of nutrition in burn therapy and physical rehabilitation.

So I do have experience in the other areas that I think I must speak to although I am sympathetic to and could not agree more with Dr. Thompson that for expediency you start with people who are most ready to begin.

But I do think that in the areas of public health and areas of medical-surgical care that certainly nutrition is an important aspect of it. And I am not just speaking, as you know, as an interested party. It is obvious that nutritional adequacy is the foundation for the patient's ability to recover.

Senator SCHWEIKER. All right. I want to thank the panel for being here today, and for making a contribution. I think you all had very important positions which will be of help to the committee in formulating national nutritional policy which is our goal this year and which we hope to carry on in some other hearings in Washington as well. so at this point in time, the committee will be in recess for the day.

[Whereupon, at 3:36 p.m., the select committee was recessed.]

APPENDIX

FROM MARY ANN SCIALABBA, R.D., M.S., ASSOCIATE DEAN

UNIVERSITY OF PITTSBURGH, SCHOOL OF HEALTH-RELATED PROFESSIONS

I am pleased to submit the following statement relative to nutrition education and shall address my remarks first to the status of nutrition education in nursing and allied health professions and then to some thoughts on the question of nutrition education generally. This statement is being presented from my perspective as a professional dietitian as well as an allied health professions educator.

A problem in any discussion of nutrition is the confusion that may result from the practice of using the same terms to mean different things. For purposes of this paper, therefore, the following definition of terms is offered and will be used throughout.

Nutrition Science.—Will refer to the study of the combination of processes by which the human organism receives and utilizes the nutrients (basic parts or chemicals in foods) necessary for the maintenance of its functions and for growth and renewal of its components. This study is based on and integrated with the sciences of Chemistry, Biochemistry and Physiology. It is utilized in the making of judgements relative to standards for nutritional status at various ages and physiological states and in the prevention, diagnosis and treatment of nutrition-related diseases.

Dietetics.—Will refer to the study of the art and science of feeding individuals and groups in different age and health conditions. It is the translation of nutrition science to food and eating behavior and includes a knowledge of the nutrient content of food and the economic, social and cultural factors in meal planning, food selection, storage, preparation and service.

NUTRITION EDUCATION IN NURSING EDUCATION

The study of nutrition has traditionally been included in the education of nurses. Nursing Education might well serve as a model and may provide some lessons for an approach to the implementation of nutrition into the curricula of other appropriate health professions.

The profession of nursing has historically viewed nutrition as a vital component of its practice, both in the care of the ill in hospitals and the well in public health practice. Nutrition and dietetics content has not only been a requirement in the curriculum but also has been included in state board examinations required for licensure. At first the content was taught by nurses to nurses. As the feeding of the ill became the function of dietitians, and as nutrition science became more complex, this teaching was turned over to dietitians.

In the early days of nursing education when schools of nursing were based in hospitals, nutrition and dietetics were taught as discrete courses by a dietitian borrowed from the hospital dietary department. This proved ineffective for a variety of reasons. There was insufficient application or perceived relevance on the part of students to their primary interest—the provision of nursing care. Hospital dietitians in many instances did not view teaching as their primary concern nor were they necessarily effective teachers. Their education and interests often lay more with the management of the hospital's food service and in the calculation of diets and the counseling of patients.

Without the commitment of the accrediting bodies and the educational leaders in both the nursing and the dietetics professions to the need for nutrition and dietetics education it may well have simply been discontinued. Instead other means were found for a more effective approach. The integrated method was implemented and dietitians with particular expertise and interest in teaching

were hired as full time members of the nursing faculty. By this method the instructor is able to teach pediatric nutrition and dietetics at the time Pediatric Nursing is taught, Medical-Surgical Nutrition and Dietetics at the time Medical-Surgical Nursing is taught, Nutrition Counseling when Nursing Counseling is taught, Nutrition science principles when the basic sciences are taught, etc. All this is done in cooperation with and participation by the appropriate nursing instructor.

The fact that nutrition and dietetics content is a requirement and that the nursing faculty believes in that requirement has made the integration of content possible. The effectiveness of the teaching and learning is still dependent on the effectiveness of individual nutrition instructors to make the content relevant and acceptable and their ability to work with and be accepted by the nursing faculty in whose courses they must integrate the content.

As nursing education has moved from hospitals into collegiate settings, as the cost of the educational programs has continued to increase and there has not been the ready availability of dietitians interested in and prepared to teach on collegiate nursing faculties there has been a tendency to utilize existing science and nursing faculty to teach nutrition content. This has meant that although nutrition science continues to be included, the study of dietetics has had less emphasis.

Although nursing continues to emphasize nutrition as a vital part of total care and although nurses provide nutrition counseling in a variety of settings, it is only one of many aspects of nursing care. As a result, nutrition and dietetics counseling may often have low priority and in practice nurses generally look to dietitians and nutritionists to accept the primary responsibility for the education of the public.

NUTRITION EDUCATION IN ALLIED HEALTH PROFESSIONS

The recent proliferation of various health technician and technologist educational programs makes it possible to estimate some 150 plus different categories of health workers educated anywhere from six months post high school programs to one year post baccalaureate programs. Excepting for the profession of dietetics, few if any of these programs to my knowledge require or include nutrition content although the basic sciences from which the science of nutrition draws are included as appropriate. The curricular requirements for these professions is geared to preparation in the specific competencies of their practice (e.g. physical, occupational, radiologic and respiratory therapy, laboratory technology, health records administration). The curricula are crowned and those things that are "nice to know" but not directly a part of the professional function have not been included.

Encouraging the inclusion of nutrition content in allied health professions would have the effect of better nutrition educated health care workers who might themselves not fall prey to the purveyors of nutrition misinformation, but, would have limited expression in patient care activities. The exception may be the new group of professionals termed Physician Assistants or Associates, especially those who function in primary, pediatric and obstetric care. Encouragement of the Council on Medical Education of the American Medical Association to include nutrition science in the Essentials of Education it sets for these programs may well be warranted.

In most cases health professionals, be they physicians, dentists, nurses or allied health professionals, if involved at all, are involved at the level of their own education and at the level of nutrition science as it relates to the care of the ill. Dietetics education and practice especially for the well is left to professional nutritionists and dietitians and to all the others (food industry, mass media and others) with interest and/or expertise in the application of nutrition principles to food and eating behavior. The need for health professionals to understand basic nutrition principles, to apply these in their practice when appropriate and to reinforce when they can the preventive aspects of nutrition is obvious. To expect, however, that they can become experts in the complex business of food, diet and eating behavior along with all they need to know for their own practices is unrealistic. This will have to be left to those who will do the required research and become the experts.

THE PROFESSION OF DIETETICS

Some attention in this discussion must be given to the profession of dietetics. The professional dietitian is defined as the "translator" of the Science of Nutrition into the action of furnishing nourishment to people. The educational pro-

gram for dietitians, therefore, involves major emphasis in nutrition science and in dietetics. Historically, dietitians have practiced primarily in hospitals and other institutions, have used their "translating" skills in the feeding of groups of people in these institutions, and have served as resource persons for other health professionals. Dietitians have also practiced in the area of preventive nutrition as members of public health department staffs. With the disappearance of overt nutritional deficiency diseases and with the change in the focus of public health generally, to environmental matters, the priority, and therefore, the support for public health nutrition and nutritionists/dietitians has in recent times diminished.

The fact that dietitians are not licensed and therefore have no legal definition has also contributed to confusion as to what and who the profession does and is, and has precluded along with other factors the inclusion of a reimbursement mechanism for its services in health care legislation. Support for the education of dietetics personnel with expertise in nutrition education and for reimbursement for their services as part of cost benefit packages in health care should be considered in the total approach to nutrition education of the public.

To summarize, the inclusion of nutrition science education in the education of appropriate health professions and their subsequent impact on the nutrition education of the public will in my opinion be dependent on: (1) the availability of funds to support the instruction (2) the integration of content rather than offering separate courses (3) the support from appropriate accrediting bodies and individual school administrations for this teaching and the ultimate acceptance by the faculties and practitioners of the professions; and (4) the support of educational programs to produce those qualified and expert to teach the content and to do the multidisciplinary research required to provide the needed answers to the problem of changing food habits and to the setting of nutritional standards.

FROM MARGARET F. GLONINGER, ASSISTANT RESEARCH PROFESSOR,
MATERNAL AND CHILD HEALTH

UNIVERSITY OF PITTSBURGH GRADUATE SCHOOL OF PUBLIC HEALTH

To introduce myself, I am a registered dietitian and a member of the American Dietetic Association. My educational background includes a B.S. degree in foods and nutrition, a 1-year dietetic internship in a hospital approved for internship by the American Dietetic Association, and an M.S. in hygiene degree in nutrition.

The need for nutrition education in the medical and dental schools is supported by the increasing body of knowledge which identifies the strong relation of diet to health and disease. The prevalence of malnutrition in certain groups of the population in the United States has been abundantly disclosed in the findings of the recent Ten-State Nutrition Survey directed by Dr. Arnold P. Schaefer.

It would seem appropriate and necessary for both physicians and dentists to have a sound knowledge of nutrition in order to diagnose, treat, and prevent disease. However, it is neither realistic nor appropriate for physicians or dentists to become nutritionists any more than it is practical for a physician to become, for example, a physical therapist. The education and skills required to do nutrition counseling are of a broad scope and require knowledge, not only of the digestion, absorption, and metabolism of foods but also a great deal of knowledge of food composition, labeling of foods, and food technology. In order to do effective nutritional counseling, one has to spend considerable time with a patient to determine the eating habits and food consumption of the individual as well as the cultural norms that influence his or her food patterns. For example, it may be necessary to design a diet for a pregnant teenager with iron deficiency anemia who is also a vegetarian and has very limited cooking facilities. This is not uncommon today. In this case it would be important for the physician to be able to identify the need for nutrition counseling and the nutritional cause of the pathology that exists. In my opinion, however, it is unrealistic to expect the practicing physician to have either the body of knowledge or the time to deal with this problem satisfactorily. Rather, the physician should be able to utilize and depend on the skills of trained nutritionists for this kind of assistance.

Although there is a need for nutrition education to prepare medical and dental students to understand the bases of nutrition problems and to learn how to utilize skilled nutritionists, this alone will not solve the problem. There is also a need for the education of public health nutritionists. At present there is a serious shortage of trained personnel to deal with both individual and community-wide nutrition problems. The most fitting place for such an educational program is at the master's degree level in schools of public health. A public health nutrition program in a school of public health not only provides for the education of nutritionists but also by its very presence in the school enables students in other areas of public health to become knowledgeable of the nutritional needs of the populations they will be serving.

I would respectfully suggest that S. 324 be amended to authorize Federal funding for teaching and training of nutritionists in schools of public health.

