

Understanding nutrition communication between health professionals and consumers: development of a model for nutrition awareness based on qualitative consumer research¹⁻⁴

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ABSTRACT

Background: Consumers have been exposed to nutrition information from a variety of sources, including the family doctor. They are often not aware of their own risk behavior regarding nutrition.

Objective: This study sought to assess food associations, conversation topics, interest in food topics, and use of information sources by means of qualitative consumer research. Another aim was to provide a hypothetical model for nutrition awareness that could be tested in a quantitative survey.

Design: Three focus groups with 30 Dutch consumers altogether were carried out. Qualitative data were analyzed with the computer software program NUD*IST (QSR, Melbourne) by sorting text blocks into categories, and new themes emerged. In addition, a hypothetical model for nutrition awareness was developed.

Results: Consumers associated food most often with safe food, and food safety was the topic most often discussed. Tasty food was the most important food conversation topic. The family doctor was the information source most talked about. Furthermore, consumers possibly lacked some nutrition awareness.

Conclusions: Careful analysis revealed new themes (new in the past 10 y), such as concerns about food safety and reconsideration of the roles of family doctors and dietitians. Based on these themes, recommendations for nutrition communication were composed. *Am J Clin Nutr* 2003;77(suppl):1065S-72S.

KEY WORDS Consumers, family doctors, nutrition communication, the Netherlands, focus groups, NUD*IST, nutrition awareness, interaction between family doctors and consumers, beliefs about food, conversation topics, interest in food topics, information sources

INTRODUCTION

Today the relationship between nutrition and health has been firmly established (1-6). This evidence is translated into the Dietary Guidelines produced by the Health Council of the Netherlands in 1986 (first version; some revisions have been published) (7-9). During the past few decades, nutrition education has been developing (10). Health professionals provide nutrition education; however, the interaction between health professional and consumer is not optimal (11-13). In addition, the supply of nutrition information in the media has increased. Recently, new information sources have developed, such as websites, that provide information on demand (14). As a result, consumers have been exposed to nutrition information from a variety of sources. New questions arise, and family doctors are often called upon to answer them (15).

Answering these questions is not always easy for family doctors, because eating behavior is the result of a complex interaction of biological, economic, sociological, and psychological factors (10, 16-20). One problem is that most consumers believe they eat healthily; however, the Third National Food Consumption Survey showed that many do not (21). Little research has been done on this lack of awareness (16, 22-23). Awareness is an important concept in the Stages of Change Model (24) and the Precaution Adoption Model (25). The first model describes stages through which people may progress toward long-term health behaviors: (1) precontemplation (not yet considering change); (2) contemplation (considering change); (3) preparation (planning change); (4) action (actively changing); and (5) maintenance (sustaining change). Application of Stages of Change to nutrition is reported by Lechner et al (23). The Precaution Adoption Model distinguishes 3 levels: (1) awareness of risk behavior (eg, they know that eating too much fat is unhealthy); (2) awareness of other people's performing risk behavior (eg, they know that people eat too much fat in general); and (3) awareness of their own risk behavior (eg, they know that they eat too much fat). Only after reaching this third level will people be motivated to change. Therefore, determinants of nutrition awareness should be studied.

A goal of many nutrition education programs is to raise awareness as the first step in behavioral change (10, 16). Information sources can influence awareness positively. Previous consumer research mentioned television, radio, magazines, newspapers, health professionals, and food labels as information sources (26-31). Hiddink et al carried out an extended Dutch survey 10 y ago, with the family doctor, the dietitian, and the Nutrition Center (an independent institute that takes part in the public debate on food and nutrition; their products and services are aimed at consumers, physicians, dietitians, and teachers) as preferred sources (32).

At the moment there are new food topics being discussed, such as food safety, genetic modification of food, and functional foods. Also, thoughts about effective nutrition education have evolved

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(10, 33–34). For these reasons, we judged it necessary to add to the study of Hiddink et al (32). However, there is little information available on preexisting knowledge, attitudes, and beliefs about food, so first a qualitative research phase was carried out. This article describes the results of qualitative consumer research. Another aim is to provide a hypothetical model for nutrition awareness that can be tested in the quantitative survey.

METHODS

Focus groups

A focus group is a group with a minimum of 7 and a maximum of 12 subjects discussing their thoughts on a specific issue (35). In recent years, focus groups have become the most popular qualitative method used in social and behavioral sciences (36). We decided to use focus groups for exploration of motivations, generation of hypotheses, and ideas about new theoretical concepts. Later on, we would use them for interpreting the results of our quantitative study (35, 37–40). Focus groups have been widely used in health promotion and nutrition research (35, 41–44), combined with other qualitative and quantitative methods (35, 38, 43). We used focus groups, qualitative in-depth interviews, and a quantitative survey.

Subjects

Our target group consisted of Dutch adults aged 18–80 y. The Dutch market research office GfK took a sample from the Script-Panel, which is representative of the Dutch population. Three focus groups were composed based on age ($n = 30$): (1) 18–30 y (youngsters), (2) 31–50 y (middle-aged), and (3) 51–80 y (elderly). We decided to group participants by age because of differences in eating patterns, information demands, and communication-related habits at different ages. Each group consisted of men and women, because we wanted to evoke a broad discussion.

Procedure

In the first half of 2001, 3 focus groups met. After sampling, the recruiters contacted the respondents by telephone, mentioning that the discussion topic was nutrition communication. Focus groups were held in the evening and lasted for 2.5 h. Discussions were videotaped, and simultaneous observation was possible. After an introduction, a moderator started the interview with the aid of a checklist, which was based on various questionnaires and was funnel shaped. It contained questions about food in general, nutrition and health, information sources, food topics, nutrition knowledge, and nutrition education (including the role of the family doctor). In the middle of each session, the moderator offered each respondent 30 cards with food topics and asked each respondent to pick 5 cards out and sort them with regard to importance. Chosen cards were counted and results were discussed. When the discussions were finished, participants were asked to fill in a written questionnaire about information sources and food topics. Finally, each participant received a gift coupon.

Analysis

Initially, the authors stated their hypotheses, and transcripts of the focus group sessions were made. Relatively few researchers use software designed for qualitative analysis (45). QSR NUD*IST is the leading computer package for qualitative research (46). QSR stands for Qualitative Solutions and Research,

an Australian software development company, and NUD*IST stands for Nonnumerical Unstructured Data Indexing, Searching, and Theorizing. It is an index-based approach, which means that codes are kept in an index system to explore ideas and create concepts (46). Data were analyzed by the first author, using version 4 (47). Before analysis, a coding framework was constructed based on the research aims and interview schedule.

Hypothetical model

Figure 1 shows our hypothetical model of nutrition awareness. Three environmental variables were included: commercial sources, neutral sources, and social sources (**Table 1**). Next, 8 individual variables were included (Table 1). Also, sociodemographic variables were included: sex, age, education level, income, life cycle, and residence (56).

RESULTS

Below, the results of the focus groups will be discussed. For each category, the first 10 subcategories will be listed. Next, the first 5 subcategories will be discussed. We will finish with some remarks about lack of awareness.

Food associations

The first 10 associations, in decreasing order, were (1) safe food, (2) preparing meals, (3) healthy food, (4) tasty food, (5) eating less fat, (6) unhealthy food, (7) price of products, (8) vegetables, (9) balanced food, and (10) shopping.

The most important association was safe food, and different perspectives were voiced. First, it was associated with food scares: “In general, news about nutrition is negative. When they talk about nutrition, it is always about trouble. Salmonella, dioxins, and BSE [bovine spongiform encephalopathy] are the news topics.” Other associations were food hygiene, use of pesticides and insecticides on plants, genetic modification of food, and food additives. The elderly talked most often about safe food by expressing their concerns about safe food.

Preparing meals was associated with time spent on cooking: “Very quick and easy. Let’s say, quick cooking. A lot of salads or raw food, if it doesn’t take much time, because I don’t like that.” Furthermore, consumers thought about saving meals, actual cooking time, warming up meals, danger of salmonella, cooking for groups, and recipes. The focus groups showed that youngsters were most often concerned about preparing meals.

When talking about healthy food, consumers mentioned the relationship between nutrition and disease: “When you notice that people in your environment become ill, you begin to pay attention to nutrition.” They also cited vitamin supplements, life cycle (living situation: if someone lives independently or lives together, and if someone has children or not), and sex (ie, that healthy eating is associated more with women than with men). Youngsters in particular talked about the relationship between nutrition and disease more than any other group talked about this topic.

Next, many consumers discussed the idea of tasty food. They wondered if healthy food could also be tasty food: “I know deep inside that it is not so healthy and that I should eat less. But it is very difficult, because those products are just the tasty things.” When thinking about tasty food, they thought about food preferences, homegrown fresh food, and sociability. Especially the elderly had the association of tasty food.

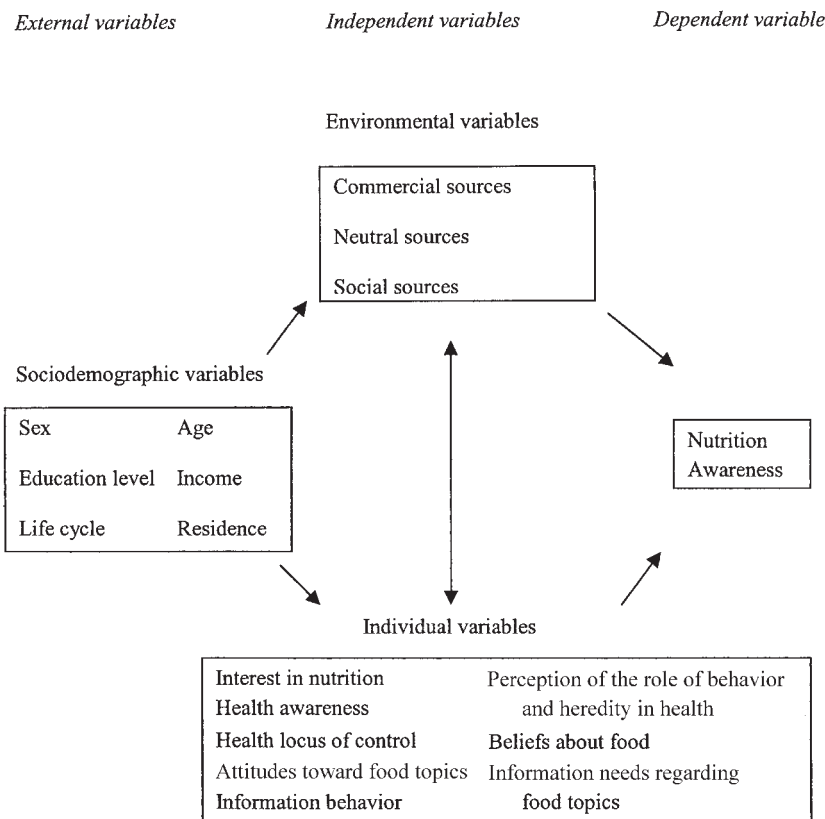


FIGURE 1. Hypothetical model of nutrition awareness.

Finally, consumers coupled eating less fat with many different efforts, such as eating fewer French fries, using baked and fried products (eg, those with olive oil), consuming low-fat dairy products, and eating lean meat or fish. They also associated it with efforts to lose weight. The group between 31 and 50 years old often mentioned eating less fat.

Conversation topics

Consumers loved to talk about tasty food. Conversation topics, in decreasing order, were (1) tasty food, (2) healthy food, (3) recipes, (4) consequences of BSE and foot and mouth disease (FMD), (5) regular eating, (6) diet, (7) price of food, (8) balanced food, (9) the question "What will we eat tonight?" and (10) nutrition of children.

When consumers talked about tasty food with others in their social environment, the conversation was about recipes, new products, and going out for dinner. "If you're going out for dinner, we ate there the other day and it was delicious." Especially the consumers between 31 and 50 talked about this with friends and colleagues.

Healthy food was also a conversation topic. Consumers often spoke about fruits and vegetables. "Who eats fruit and who doesn't, what fruit types are there and whether eating more fruit actually would help you feel healthier, because there are a lot of people who don't believe that it would." They also discussed eating habits, eating less fat, losing weight, and the relationship between nutrition and health. Conversation partners were mainly family members.

Consumers also mentioned recipes as a conversation topic. They talked about recipes with friends and colleagues. "If I made

something delicious, they asked: what have you made, what is in it, how do you make that, and how long does it take?"

Youngsters especially discussed the consequences of BSE and FMD with their friends. "I try to convince people to become vegetarian, but I must say I am not successful, although mentioning BSE helps."

Some consumers, especially the elderly, talked about regularly eating with others. They spoke about breakfast, what time meals are eaten, and snacks. "My mother often scolds me for the in-betweens. I think she really is right."

Interest in food topics

Respondents were interested in decreasing order in the following food topics: (1) food safety, (2) fruits and vegetables, (3) genetic modification of food, (4) vitamins, (5) composition of food products, (6) preparing and saving food, (7) food supplements, (8) eating less fat, (9) European E-numbers (Additives, both natural and artificially produced, are only allowed after a series of studies that show they produce no indicative health risk. After allowance in the European Union they get an E-number.), and (10) functional foods.

Food safety was the topic most often discussed. Consumers thought about food scares, food hygiene, use of pesticides and insecticides on plants, and food additives: "When my children or grandchildren visit me, I always look at whether something, like an ice cream, contains too much artificial coloring." They mentioned food safety as an important topic, and they were interested some aspects in particular: Do we eat products that are safe? How do we know if an egg is a free-range egg other than from the mark? What is going on with the use of pesticides and insecticides

TABLE 1Variables included in the model for nutrition awareness¹

Variables	Definitions
Nutrition awareness	Realization of one's own personal risk behavior regarding nutrition (25)
Commercial sources	Information sources, such as media, commercials, advertisements, displays, and shop personnel (26, 27, 29–32, 48–50)
Neutral sources	Information sources, such as family doctors, dietitians, Consumer Alliances, national education organizations, and government (26–32, 48–50)
Social sources	Information sources in the social environment, such as partner, family, friends, relatives, neighbors, and colleagues (26–28, 30, 50)
Interest in nutrition	Involvement of the consumer with the topic of nutrition (32, 48–49)
Perception of the role of behavior and heredity in health	Consumer's estimation of the contribution of behavioral factors (diet, smoking, alcohol, stress, physical activity, personal hygiene) and the nonbehavioral factor heredity on the consumer's health state (32)
Health awareness	Interest in health, which is reflected in choosing healthy food products, and interest in physical activity (51)
HLC	Individuals' beliefs in their own ability to control health (internal HLC), extent to which health is controlled by health professionals (powerful others HLC), and extent to which health is determined by chance or fate (chance HLC) (52)
Beliefs about food	Meanings attached to food in daily living (49, 50, 53)
Attitudes toward food topics	Opinions about certain food topics (49, 54)
Information needs regarding food topics	Consumers' needs for specific knowledge to obtain answers to important questions (32)
Information behavior	The way the consumer obtains information (in a passive way, one can obtain information by normal media use; a more active form is also possible, namely, actively seeking for information) (55)

¹HLC, health locus of control. Pertinent references in parentheses.

on plants? The following information sources were mentioned: newspapers, magazines, the Internet, the Nutrition Center, the research institute TNO Nutrition, the Food Inspection Department, and the Health Inspection Department.

Next, fruits and vegetables were an important food topic. Discussion points were the slogan ("Eat 200 g of vegetables and 2 pieces of fruit per day."), vitamins, the health value of fruits and vegetables, actual fruit and vegetable consumption, vegetables in combination with potatoes and meat, freshness, taste, and biological fruits and vegetables. "That information is mostly transmitted via radio and TV. It is written in all the newspapers. I think that when you are old, you still know that slogan."

Many consumers expressed dislike for genetic modification, another food topic. "And I think, why do they mess with that, why could they leave those soybeans as they are?" Especially the elderly talked about it. They were interested in information about the consequences of genetic modification for plants and humans. They mentioned the following information sources: universities, research institutes, Consumer Alliance, food labels, and the World Wildlife Fund.

Consumers believed that vitamins were an important food topic. The first thought was that they are necessary. "Every winter a lot of people catch a cold and get the flu but don't become ill, because they take extra vitamins." Other discussion topics were products that contain vitamins, vitamin supplements, products enriched with vitamins (functional foods), and what happens to vitamins during cooking.

Also, composition of food products was mentioned. Consumers talked about additives, food allergies, food labels, and food lists. Particularly the elderly spoke about this. They said they wanted more information on the following aspects: What do the European E-numbers mean? How do we know if a product contains additives? How much energy does a portion of a product contain? Information sources mentioned were food labels, the Nutrition Center, Postbus 51 (information channel from the Dutch government), food manufacturers, supermarket magazines (eg, Allerhande), and food lists from the European Union.

Information sources

Consumers mentioned in decreasing order the following nutrition information sources: (1) family doctor, (2) social environment, (3) magazines, (4) Internet, (5) dietitian, (6) television, (7) the Nutrition Center, (8) food labels, (9) the media, and (10) food manufacturers.

The family doctor was the information source that was most talked about. Especially the elderly talked about the family doctor. They said they went to the doctor when ill. "The doctor gives advice only when something is the matter." In the viewpoint of the consumers the family doctor was the one who diagnosed, advised, and eventually referred to another specialist, such as the dietitian. They found the family doctor suitable as a nutrition information source in the following circumstances: disease in general, lowering cholesterol, eating less fat, eating less salt, diet, food allergies, and drugs. "Nutrition affects your organs and the wellness of your body, so the family doctor is the best person to consult about nutrition."

Another important nutrition information source was the social environment. Many consumers got nutrition information from their partner. In addition, their parents, friends, children, and other relatives acted as information sources. "My mother tells me that I should eat healthily, and now I realize that a little bit." Social environment was especially important for the youngsters.

Magazines were often used as an information source. Magazines mentioned were supermarket magazines (eg, Allerhande), magazines for women (eg, Libelle, Margriet), magazines for parents (eg, Ouders van nu, Moeders), magazines for consumers (eg, Consumentengids, Kritisch Consumeren), and culinary magazines (eg, Sla, Lekker en gezond). "Look at the magazines: there is a lot written about diets. Women should always be thin and losing weight."

The Internet was seen as an important information source. "When something happens in your social environment, you will search on the Internet to get more information about the topic." Websites such as Health Index, Health Center, Web Doctor, Nutrition Center, and Senior Web were mentioned. The Internet was most popular among the youngsters.

Finally, the dietitian was considered an information source, especially by the elderly. "I think a doctor knows more than us but has very general information. If you really want to know something about nutrition, you should go to a dietitian." They found the dietitian a suitable source for topics such as diet, losing weight, and over- and underweight problems.

Lack of nutrition awareness

Another conclusion from the focus groups was that consumers believe they eat healthily. In this study we could not get a picture of their actual eating behavior. It was very possible that they lacked nutrition awareness. Therefore, a hypothetical model for nutrition awareness was developed as described above (Figure 1). On the basis of the qualitative research and literature, 17 factors were selected with a high probability of predicting nutrition awareness. Another 8 factors were also measured in the quantitative questionnaire but were excluded from the hypothetical model.

DISCUSSION

This article describes the results of qualitative consumer research. For discussion, we have selected the following themes.

Concerns about food safety

Food safety was the topic most often discussed. Concerns about food safety were also found in other Dutch studies (48–49, 57). Consumers found safety the most important out of several social aspects, including healthiness of a product, freshness, environmental-friendliness, animal welfare, and third-world effects (49). They were concerned about food hygiene, hormones in meat, and BSE. The Berenschot study (48) showed that 25% never worried about food safety. A recent study showed that more than 60% of the Dutch population was worried about biotechnology, particularly genetically modified products (57).

Concerns about food safety can be explained by the fact that the physical and psychological distance between producers and consumers is still growing. In recent years food technology has rapidly developed, and consumers have little idea about how food is produced. These factors have led to a process of alienation (58). Many consumers believe they have no control over food safety (57). Recent food scares have worsened this, because in panic consumers have drawn the wrong conclusions. At this moment, food is in fact safer than ever before (58).

Tasty food versus healthy food versus safe food

Respondents viewed tasty and healthy food as 2 different and mutually exclusive things. In the Western European way of thinking, "healthy" is associated with reasonable thought, and "tasty" with emotion. Rozin et al (59) noticed cultural differences in concerns about healthiness and obtaining pleasure from eating. Food could also be dichotomized into the categories of healthy food and junk food. Junk food was associated with pleasure (43). According to Falk et al (50), many people associated eating with good health. Another study showed that consumers' first association was pleasure (53). Food choices were often guided by how foods taste. Nutrition education ought to consider pleasure as well as safety.

Furthermore, consumers noticed that healthy and safe were different concepts. In their perception, safe food had to do with the short term, whereas healthy food was associated with the long term. Generally, people are more sensitive to short-term

than to long-term considerations (60). Therefore, we decided to develop 3 hypothetical models: nutrition awareness (Figure 1), tasty food awareness, and food safety awareness. The last 2 models will be described later.

Concerns about weight

Many women believe that a slim figure is achieved by eating healthy food and avoiding junk food (43). In our study, respondents hardly mentioned weight. In general terms, the youngsters discussed losing weight and the slenderness ideal. One respondent admitted being too heavy, but the others did not. Some were, in fact, overweight, as about 40% of Dutch people are (61).

In contrast, during the in-depth interviews a lot of people complained about their weight. They said they paid attention to their weight and admitted being too heavy. They expressed a need for more information about (losing) weight and mentioned the dietitian and family doctor as information sources. So weight seems to be a sensitive topic that is hard to get at in a focus group. Participants felt more comfortable speaking about it in in-depth interviews when only the interviewer was present.

Information overload regarding fruits and vegetables

Despite interest in fruits and vegetables, respondents did not need more information, because they already knew. Responses to the question "What dietary guidelines do you know?" indicated high knowledge (eg, "Eat 200 g of vegetables and 2 pieces of fruit per day"). General principles are taught in schools and communicated by the Nutrition Center. In this way communication flowed via the central route of the Elaboration Likelihood Model, meaning that there was a high tendency to think about the topic thoroughly (62). The other way of information processing goes along the peripheral route, which involves cues such as information source of the message, form of the message, and the behavior of others (63).

Furthermore, repetition was involved. The messages have worked because they convince and remind. However, reactions turn sour if messages are presented too often (overexposure effect) (64). Consumers experienced information overload owing to repetition. Providing some novelty in the repeated messages keeps things interesting.

Concerns about preparing and saving meals

Youngsters were concerned about preparing and saving meals. This can be explained by the convenience culture. Consumers are living in the 24-h society: they always have to hurry and do their shopping and cooking in a rush. Of course, food producers have noticed this and developed convenience products (65). Youngsters have never learned to spend a lot of time on cooking and about alternatives to convenience food, so they have become used to convenience food.

Information needs of the elderly

The elderly were probably more receptive to new information. In accordance with a recent study (57), they expressed a need for information about genetic modification of food. They said they wanted information about new topics such as food safety, composition of food products, food supplements, and functional foods. The information needs of the elderly are important and should be acted on, because the number of people over 50 in the Dutch population is rapidly growing (58) and making increasing demands on the health care system.

TABLE 2

Recommendations for nutrition communication

Give transparent information about food safety: make clear which food chains are involved in food production. The recently established Dutch Food Authority could narrow the gap between consumers and producers (57). The Nutrition Center could provide information to consumers, helping them cope with potential future food scares.

Discuss weight: overweight is a social problem and should be a discussion topic among scientists and members of the general public. The emphasis should not be on losing weight, but on eating a balanced diet and getting enough physical activity. Family doctors and dietitians are considered to be suitable information sources.

Disseminate a new message: healthy eating can also mean tasty eating. This is something the family doctor should take into account.

Try the peripheral route for communication about fruit and vegetables: the central route probably does not work any longer because of information overload. The focus should be on peripheral cues: a clear statement by a reliable and expert information source, an attractive message form that is new and different, and attractive role models who show the best behavior to adopt.

Educate youngsters about preparing and saving meals: raise awareness and increase their knowledge, attitudes, self-efficacy, and skills. School probably provides a good setting (eg, biology lessons, care lessons, techniques lessons).

Fulfill the information needs of the elderly: provide information about new food topics. The family doctor should consider the needs of the elderly, because they frequently go to the doctor.

Strengthen cooperation between family doctors and dietitians: both groups of health professionals should work together, because they could benefit from each other and play complementary roles.

Roles of family doctors and dietitians

Family doctors and dietitians were considered complementary: the family doctor indicated, advised, and eventually referred to the dietitian. Despite the fact that only a few consumers had had experience with a dietitian, participants perceived dietitians as being more reliable and more knowledgeable about nutrition. Family doctors and dietitians are in a position to provide effective nutrition interaction (66). According to Fuller et al (67), people believe that family doctors play a role in nutrition communication when patients have something wrong with them. Good referrals were also deemed necessary when health themes were involved.

Determinants of nutrition awareness

Little research has been done on the determinants of nutrition awareness. Women and more educated consumers were usually more nutrition aware (68). The Pan-EU survey (53) concluded that youngsters (<35 y) were more aware of diet because of their lifestyle and outlook on health. A thorough analysis of the determinants of nutrition awareness is necessary. Therefore, we have developed a hypothetical model for nutrition awareness, to be tested in the quantitative study.

Limitations and implications

The topics health and family doctors got extra attention in the discussion. It could be that the results were exaggerated. If so, the quantitative study will clarify these points.

Based on the themes, recommendations for nutrition communication were written (Table 2). The results of this study served as a basis for the development of the quantitative questionnaire. The hypothetical model for nutrition awareness will probably be useful for target group segmentation. Finally, family doctors and

other health professionals could benefit from understanding how consumers think, talk about, and act with regard to nutrition, and in turn this could enhance the effectiveness of their nutrition-related interactions.



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