COMMUNICATION CONTENT OF NUTRITION INFORMATION IN SELECTED POPULAR PRINT MEDIA

By

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ABSTRACT

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One hundred and one articles from the popular print media (1975-1978) on the topic of salt and hypertension were evaluated to document the accuracy of the nutrition information, the physical characteristics, and the journalistic techniques presented to the public. Most of the articles evaluated were written by journalists and a few articles were written by nutritionists and physicians.

A high number of appeal statements and an easy reading level were present in articles written by journalists, nutritionists and physicians. No difference was found in the number of accurate nutrition/hypertension statements and the author of the article. Articles written for family/health/science publications contained the highest number of appeal statements and accurate nutrition/hypertension statements. Articles in magazines contained more accurate nutrition/hypertension statements than articles in newspapers. Some articles contained both accurate and inaccurate nutrition/hypertension statements.

In honor of my Mother,

Irene O'Connor Jacobs,

who sets a good example

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INTRODUCTION

Popular print media daily bring to a large number of people information about a multitude of topics. Many readers accept a printed report or story as a factual and unbiased account of the events. However, examples exist that demonstrate inaccuracies of a printed report and the actual event, such as weather forecasts. The reader can easily judge the accuracy of the printed weather forecast with the actual day's weather because of the short time span between prediction and event.

Sometimes, the repetition of a story or idea in print media can seem almost factual to the reader. For example, articles in the print media about a new drug to help fight disease in humans may contain erroneous statements or incomplete details. However, the frequent appearance in the print media of this topic may cause even the most careful reader to accept some of the statements as fact. The public demand for instant answers may cause the slow, systematic methods necessary in scientific research to be abbreviated or overlooked. Print media often publish unverified hypotheses as proven fact in an attempt to arouse the interest of the reader in the story and the publication.

The topics of hypertension and its dietary treatment frequently appear in the popular press as items of current health concerns. An

investigation to document what information is presented to the public in the print media about hypertension and diet may provide a model for further investigation of nutrition and health information in the popular press.

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REVIEW OF LITERATURE

The Print Media As A Source Of Health Information

The Media

The classic definition of communication is who says what, on which channel, to whom, how, and with what effect (Lasswell et al., 1952). The "transmission of information, ideas, and attitudes" from one person to another requires three elements: a source, a message, and a receiver (Hixson, 1972).

Mass media reach a large number of people through a single source. Mass media are the intricate communication machineries, such as newspapers, television, radio, and magazines. Mass media play two major roles: 1) a channel for informing people and stimulating and reporting public interest, and 2) a channel for advertising that contributes to the expansion of the national economy (Hixson, 1972).

Through the media, journalists, photographers and others, reflect and report on the ways humans act, their tastes, beliefs, and customs. The media attempt to satisfy human curiosity about people by providing news, selected opinion, and entertainment.

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Health Education

One of the objectives of health education is to provide information about health problems in an understandable, acceptable and rememberable manner (Fletcher, 1973). If the consumer is presented with information about the risks to his health he takes daily, he is better able to decide if he wants to change his habits to improve health.

According to Day (1973) an individual goes through several steps in processing information before acting upon it. The individual is presented the message or information, attends to the message, understands and believes in the message, and then acts according to the new belief based on the message.

Leventhal (1973) noted that since behavior is an on-going process, education for positive health practices is also a life-long task. The study he conducted, directed at reducing cigarette smoking, concluded that providing exact specifications of when, where and how to take action is important. Provision of exact specifications for action provided a link between the person's attitudes and behavior. The individual was made aware that to improve health he needed to do something, and then he was provided information about changes he could make, and how these could be made.

The repetition of health information by many sources increases the likelihood that the consumer will receive the message, and possibly incorporate some part of the health information into his lifestyle (Fletcher 1973). A printed article generally has a more lasting effect than television or radio stories because the magazine or newspaper may be kept and re-read (Agee et al., 1979).

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An individual should be motivated to learn accurate and understandable health information. Media programs can help motivate clients to change faulty health practices (Stamler, 1978). Swinehart (1974) suggested that non-health appeals, such as saving money by not having visits to the dentist to treat cavities, in media stories, may be more effective in changing patient behavior than stories that contained health-oriented reasons for changing behavior.

Information and knowledge about what actions an individual can take to improve health do not guarantee that the individual will take the recommended action. Frequently there are inconsistencies between the knowledge about health and an individual's actions. For example, most people believe that brushing one's teeth will reduce tooth decay. Yet it is difficult for some people to associate the act of daily brushing of one's teeth with the consequences of not brushing them. In a national survey of health behaviors, 83 percent of those surveyed mentioned brushing teeth as a way to prevent dental disease, yet only 55 percent of the respondents said they had brushed their teeth the day before (Swinehart, 1974).

Another example of inconsistency between a health belief and an individual's action was provided in the American Family Forum (General Mills, 1979). Seventy percent of the adults with school-age children in a group studied, indicated that they were concerned about the cholesterol and fat content of their children's diet, yet only 13 percent of these parents had had measurements of blood cholesterol and fat determined in their children.

As a general rule, an individual will choose the easiest way to eliminate differences between his thoughts and actions (Day, 1973; Sherwood et al., 1969). Some people can tolerate a greater number of inconsistencies between their thoughts and actions than others. These individuals do not find that agreement between all aspects of thought and action is particularly satisfying.

Learning occurs within the individual (Hertzler and Owen, 1976; Rash and Pigg, 1979), but he cannot be forced to learn or practice that to which he has been exposed. Some people do not want to be moved from a comfortable state of indifference on an issue (Mendelsohn, 1973). A major task facing the communicator under such circumstances is to recognize, understand, and attempt to overcome much of this apathy.

Almost all people make decisions on health practices based on health information they believe is factual and relevant to them. If the individual identifies himself as experiencing a health problem, he is more likely to perceive the philosophy or an action appropriate to improve his health as relevant and to incorporate it into his health belief framework, than before he recognized himself as having the health problem. Bedworth and Bedworth (1978) defined health behavior as a manifestation of one or more motives, such as personal capabilities, current social attitudes, opportunities to respond, or personal pleasure.

Jones (1977) reported that about half the people in a 1976 survey of 1400 U.S. households had changed their diet due to health concerns. Changes in food selection habits were prompted by the individual's health problem (either diagnosed by a physician or self-ascribed), and

his attempt to either eliminate or avoid it. A later study (General Mills, 1979) noted that Americans did not change their diets due to health concerns for four primary reasons: 1) people enjoy eating certain foods that are not as healthful as other foods, 2) people lack discipline, 3) the present diet is habit, and 4) the cost of healthier foods is sometimes more than the high calorie foods.

People can be persuaded to change harmful but enjoyable health habits in order to improve health. Individuals should be provided with relevant information in a way that will affect attitudes and behavior; provoking some concern, but not too much (Fletcher, 1973). The aim of all health education should be to develop intelligent behavior, rather than to foster decisions based on fear (Bedworth and Bedworth, 1978).

A health-conscious consumer may alter his food habits if he is aware and believes that his habits may be a risk to his health. The consumer needs to know what factors influence his health.

Sources of Health Information

Most scientific knowledge obtained by the consumer comes from the reading of magazines, newspapers, pamphlets, and books (Mayer, 1977). In general, the consumer tends to read about subjects which interest him. Health and nutrition stories are more likely to be read by individuals who see themselves or someone they know in the story. The general reading public may not focus their attention to health and nutrition stories which they feel are irrelevant to them.

The consumer receives nutrition information from many sources (Table 1). According to the 1980 Woman's Day/Family Food Study, consumers described themselves as less-informed today than they were two years ago about nutrition and diet. Also, their sources of nutrition and diet information had changed in the past two years. Consumers were as likely to use newspaper and magazine articles (35%) and advertisements (22%) as they were to use doctors (34%) as their main source of information about nutrition and diet (Yankelovich et al., 1980).

According to another report doctors and dentists were the most frequently used sources for health information (Yankelovich et al., 1979). Television programs, news stories, health columns in popular newspapers and magazines were next chosen as the sources of health information. Confidence in the family doctors as sources of health information was high, but confidence was low in the newspaper columns by doctors. Near the bottom of the list of health information sources were the health claims made in product advertisements (Yankelovich et al., 1979).

Earlier Podell et al. (1975) asked 163 family physicians, internists, pediatricians and medical students to define which foods were allowed on a low salt diet. Only 22% correctly identified the appropriate foods. When asked about dietary treatments for other illnesses, the highest percentage of correct answers were in health topics which were currently popular in the popular press. The results of this study supported previous findings that the knowledge of clinical nutrition by physicians and medical students was inadequate. This study also suggested that

Table 1. Consumers' sources of nutrition and health information[a]

Information Source	Type of Information					
	Nutrition (Yankelovich et al., 1980)	Nutrition (Woolcott, 1980)	Health (Yankelovich et al., 1979)	General (Kolasa et al., 1979)	Nutrition (Fox et al., 1970)	Nutrition (Jalso et al., 1965)
Magazines and Newpapers	35	63.8	25	--	--	65.3
Magazines	--	--	9	20	63	--
Newspapers	--	--	29	17	48	--
Radio and Television	--	--	--	--	--	10.1
Radio	--	--	--	10	21	--
Television	15	--	31	19	34	--
News Stories	13	--	--	--	--	--
Magazine and Newspaper Advertisements	22	46.5[b]	14[b]	--	--	--
Television Advertisements	16	--	--	--	--	--
Doctors	34	35.4	45	--	70	9.9
Nutritionists	--	19.5	--	--	--	--
Dentists	9	--	--	--	--	--
Books	27	--	14	17	47[c]	28.7

Table 1 (cont'd)

Information Source	Type of Information					
	Nutrition (Yankelovich et al., 1980)	Nutrition (Woolcott, 1980	Health (Yankelovich et al., 1979)	General (Kolasa et al., 1979)	Nutrition (Fox et al., 1970)	Nutrition (Jalso et al., 1965)
Cookbooks	16	--	--	--	--	--
Nutrition Labels on Food Products	20	--	10	--	--	--
Friends/Family	15	22	16	--	--	--
Government	9	19.8	10	--	17	15
School/University	11	--	30.7	--	--	--
Industry	--	13.6	--	--	--	--
Other	14	32.6	16	15.7	3	--
Don't Know/None	--	6	--	--	--	--

[a]Presented as percentages of consumers in the study stating use of information source.

[b]Combined percentages of magazine, newspaper, and television advertisements.

[c]Combined percentages of books and cookbooks.

medical professionals were highly dependent upon non-professional literature for their information about diet and nutrition.

According to several surveys regarding health and nutrition conducted in Canada (Woolcott, 1980), the mass media stand out as the major, powerful source of nutrition information for the consumer. Print media were selected more frequently than television/radio as the consumer's source of nutrition information. Nutritionists were mentioned as sources of health and nutrition information by less than 20% of those interviewed.

Kolasa et al. (1979) found mass media used frequently as information resources by the family for learning within the home. Magazines and newspapers received 37% of the reported usage as information sources, while television and radio were used as information resources by the family approximately 29% of the time. The study by Jalso et al. (1965) on food faddism concluded that newspapers and magazines were the consumer's most frequent sources of new information. This was followed by books, government and extension publications, radio and television programs, and doctors.

The Media as a Teacher

Mass media can be divided into two broad categories: print and electronic. Print media include newspapers, magazines and books. Newspapers provide news, opinions, entertainment and advertisements. Magazines focus on special interests and tend to be more penetrating than newspapers in their coverage of current affairs. Print media can provide consumers with more in-depth scientific information on nutrition and its relation to health and disease than television or radio.

Newspapers may be defined as periodicals published at least weekly in recognized newspaper format and having general public interest and appeal (Emery et al., 1971). Magazines are publications issued periodically, usually bound in soft paper cover, typically containing stories, essays, poems, and frequently specializing in a particular subject area.

News about science and health reaches the public in waves, rather than in a steady stream. A health topic may be discussed and argued on a page or column in an issue of a periodical and then may be dropped from discussion in the following issue because it is no longer "news" or "special interest." During the discussion of the topic, conflicting information and advice may be presented. Editors argue that their role is not education (Fargo, 1976). Newspapers are not organized to repeat in each issue which contains an article on a particular topic, basic concepts and to provide continuity of information, two essential components of all educational processes.

The reading level of a publication should meet the educational level of the people who will use that publication. Gunning (1952) developed a simple and reliable method to determine the reading level of printed materials: the Fog Index. The Fog Index or reading level is calculated from a 100-word sample, the number of words per sentence, and the number of words with more than 3 syllables in the sample from the printed material.

The general reporter of either the print or broadcast media, while attempting to present a balanced viewpoint, may inadvertently or intentionally bias a story (Mattson, 1977). A science story may contain

unfamiliar language and a multitude of details. The reporter may streamline parts of the story to meet space limitations and in so doing may misinterpret or distort the content. The journalist provides, in many cases, almost all of the information on a subject that the reader uses to form his opinion. Writers for the media may make judgments about health issues which could create alarm among consumers. Without training or an understanding of nutrition and diet issues, a writer may misconstrue or overlook facts which should be reported.

The number and types of errors committed by journalists in reporting science news were analyzed by Tankard and Ryan (1974). Forty-two error categories, including origin of story, headlines, and omission of information were investigated in their study of 166 science newspaper articles. The mean number of errors committed was 6.2 per science story compared to 0.77 errors for general news stories. Only 8.8 percent of the science articles were described as error-free.

In a follow-up study Tankard (1976) stated that science writing was not extremely inaccurate compared to other reporting. Forty-two error categories were defined by the original investigators compared to 14 error categories usually defined in accuracy studies of general news articles. A second analysis of the same science news articles used in the Tankard and Ryan (1974) study with only 11 defined error categories resulted in an average of 2.2 errors per story.

Herbert (1980) stated that professionals and those who comment on health matters to the press should present the basic facts rather than sensational anecdotes. Hypotheses should be discussed as unproven and still to be tested, rather than presented as proven fact.

People with special knowledge in an area such as science or nutrition distrust mass-media presentations of their own fields. In contrast, they accept the information the media presents in other fields (Pierce, 1972). Ignorance has been defined as the absence of knowledge available elsewhere in society (Berelson, 1952). The consequences of scientific ignorance in our society are, for the most part, still almost unknown.

The popular print media can be an important source of nutrition and health information for the public. Articles in daily newspapers function primarily to inform the reader about current events of general and local interest, rather than to act as a thorough teacher of specific topics.

Tankard (1976) stated that the majority of errors in science articles came from the omission of information from stories. He suggested that editors should use complete stories with all the information, even if more space is required, in order to provide useful and accurate information to the reader. This may mean a fewer number of stories per issue. Magazines, because of the characteristics of their publication on specialized topics, could function more readily than newspapers as a complete information source about nutrition and health.

Advertisements in the Print Media

Advertising is news itself -- news of new products, new uses, new styles, new models (American Newspaper Publishers Association, 1940). Advertisements are an indispensable, crucial force of communication (Nicholl, 1978). Advertisements tell the story of goods and services available to the society. Communication vehicles of advertising include the print and broadcast media (Callahan, 1978).

The message in an advertisement is specific for an individual. The same message may contain different proportions and different items of information for each reader (Hunt, 1976). On topics with which a consumer is likely to be well informed, assimilation of advertising information is low. If the consumer is unfamiliar with product quality, advertisements inform as well as provide validation of what the consumer already knows (Bucklin, 1965). Becker et al. (1976) found that readers regarded advertisements in a newspaper as more credible than advertisements presented in the broadcast media. Grotta et al. (1976) noted that if the reader felt that the newspaper advertisement contained information of value to him, a clear distinction could not be made between advertisement and non-advertisement content in the newspaper. Readers viewed both as sources of information, rather than as news or advertising.

Repetition of advertisements tended to reinforce the developed buying habits of the consumer (Ehrenberg, 1974). The consumer purchased a product, used it, compared its performance with that in advertisements, and if satisfied purchased the product again.

Magazine advertisements have a relatively long life. Magazines are kept in homes for weeks or months, and then may be passed along to friends (McClure and Fulton, 1964). Emery et al. (1971) stated that advertisements have the redundancy of message desirable in the educational process. Repetition of the same message increases the likelihood that the main ideas will penetrate consumer-consciousness even if part of the message is lost.

Marquez (1977) outlined three techniques for getting people to act in a particular way: persuasion, information, and intimidation. He applied these characteristics to an analysis of advertising techniques. The analysis of newspaper and magazine advertisements showed that twice as many consisted of persuasion characteristics as information about the products, and that in advertising persuasion and information are inseparable. Advertisements which contained the most product information were for products such as automobiles and major home appliances about which the consumer needed specific information (i.e., dimensions, guarantee specifications, service agreements).

Mayer (1975) remarked that one roadblock to nutrition education is probably advertising of food products. Readers may find nutrition information that conflicts not only with other advertisements for the same or similar product, but which also conflicts with the information presented by nutrition authorities.

The United States government has established regulations in the Fair Packaging and Labeling Act which govern what types of statements or claims the advertiser of a food product can make (Sandage et al., 1979). For example, a food product may be advertised as "low in sodium" or "contains no added salt." To support this claim, the advertiser must analyze the food for the actual sodium content and print the amount on the label of the food product. The sodium information on the label provides a guide for the consumer about the product and the meaning of the advertiser's claim of "low" sodium. The declaration of sodium content on food labels is voluntary by food processors.

Hypertension In The United States

Hypertension As a Major Public Health Problem in the United States

Hypertension affects more than 20 percent of the population of the world and about 24 million people in the United States. Samples taken of the general United States adult population ages 18-79 years indicated that 15 percent of the whites and 28 percent of the blacks have high blood pressure (White and Crocco, 1980). High blood pressure is generally classified as two types: essential or primary hypertension and secondary hypertension. About 90 percent of the individuals with hypertension are classified as essential or primary. These individuals have a persistent elevation of blood pressure.

Hypertension is a sign, not a disease entity, and may result from a variety of causes (Darby, 1980). White and Crocco (1980) reported that individuals with hypertension had an increased risk for developing several diseases including coronary heart disease, congestive heart failure, cerebrovascular accidents, and renal insufficiency. Numerous epidemiologic studies have supported the importance of elevated blood pressure as a risk factor in the development of stroke and coronary heart disease (Dawber, 1978).

There have been several reviews of salt and its relationship to hypertension (Freis, 1976; Tobian, 1979b). Epidemiologic studies do not provide conclusive evidence of a causative relationship between salt levels consumed in the United States diet and the development of hypertension (Darby, 1980; Dawber, 1978; Institute of Food Technologists, 1980).

Physiologic Need for Sodium

Sodium chloride, most frequently found in the food supply as common table salt, is an essential part of the human diet. All animals, including man, require sodium to maintain the pressure and volume of blood, and to perform many other bodily functions. Both sodium and chloride are normal and necessary parts of body tissues and fluids, and they must be provided in the diet. A 70 kilogram adult male body contains about 1059 grams of sodium (Tobian, 1979b).

Appetite for salt in the civilized world is acquired (Dahl, 1972). The addition of salt to food, however, is not essential to good health and physical performance in humans under normal conditions (Dahl, 1972). Table salt is not the only source of sodium. Sodium may also be present in such items as canned and frozen foods, condiments, baking mixes and water.

The absolute requirement for sodium by the human has not been determined. The most frequent estimate of the minimum amount needed daily by the adult is 200 milligrams of sodium (0.5 gram salt) (Institute of Food Technologists, 1980; Salt Institute, 1980). The average North American daily diet is estimated to contain currently about 3 grams of salt naturally occurring in the food eaten, about 3 grams of salt added by the cook and at the table, plus some 4-6 grams added during commercial processing.

Many scientists are undecided about the daily salt needs of humans. The Food and Nutrition Board in the 1980 National Academy of Sciences Recommended Dietary Allowances recommended the range of salt intake for

adults should be between 3 and 8 grams per day (1100-3300 milligrams sodium). The 1980 sodium recommendation was presented as a range because of inconclusive information about the relationship of high daily salt/sodium intakes and the occurrence of hypertension. The previous edition of the Recommended Dietary Allowances (1974) did not contain a specific recommendation for daily salt intake.

Management of Hypertension: a Health Concern

General measures for management of essential hypertension include: education, weight control, dietary sodium/salt restriction, increased exercise, relaxation, and a change in lifestyle (Aagaard, 1973; Black, 1979; National High Blood Pressure Education Program, 1979).

The association between obesity and hypertension is not yet understood (National High Blood Pressure Education Program, 1979). Studies by Dahl and co-workers (1958, 1972) of obese adults with essential hypertension concluded that a drop in blood pressure was due to a restriction of dietary salt, rather than a restriction of calories and the subsequent weight loss. Reisin et al. (1978) concluded the opposite in a study of overweight adults with essential hypertension. Weight loss in these individuals led to a reduction in blood pressure which was independent of the salt intake. The relationship between obesity and dietary salt intake to blood pressure is still unclear.

The role of salt as a causative factor in high blood pressure has been demonstrated in animal studies using salt-sensitive rats (Dahl, 1972). However, it has not been clearly demonstrated that the salt

content of the present American diet, 10-12 grams (Darby, 1980) contributes to the development of hypertension.

The tendency to develop hypertension in humans is influenced by salt intake and the predisposition of the individual to the disease (Tobian, 1979a). Sodium intake has been suggested as being a major factor in the development of hypertension in man (Black, 1979).

Freis (1976) noted that in many, but not all, studies of various ethnic populations, positive correlations existed between the estimated average salt consumption and the incidence of hypertension. Blood pressures tended to be higher in black adults than in the white adults with similar sodium intakes (McDonough et al., 1967). Marcinek (1980) stated in her review of hypertension that the prevalence of high blood pressure in blacks was higher than in whites, with an overall ratio of almost 2:1.

The relation of salt intake during childhood and the later development of hypertension remains ambiguous (McEnery and Davis, 1978). Lauer et al. (1976) compared salt preference, weight and blood pressure of school children aged 11-16 years. Subjects in the highest blood pressure range (95th percentile) exceeded the median of weight for height of their age and sex group. However, there was no relationship between salt preference and blood pressure.

At present, few experimental data support the suggestion by Freis (1976) that people with a family history of hypertension should reduce their dietary salt intake to less than 1 gram of salt a day. This recommended amount equals about 0.4 gram sodium or about 1/8 teaspoon of salt.

In a recent survey of people in American households about their concerns about health, (Yankelovich et al., 1979) 35 percent mentioned the use of too much salt as a concern. This concern was eleventh in a list of 22 health concerns. Hypertension was mentioned as a health problem by 22 percent of the households. Fifty-five percent of those households that had at least one member with high blood pressure had changed their dietary patterns to decrease salt intake.

Even though sodium is essential for normal functioning of the human, the role of dietary salt in the etiology of hypertension is unclear. One method of treatment for individuals with high blood pressure is to restrict the salt in their diets. Darby (1980) noted that marked restriction of sodium to 200-500 milligrams a day often reduced the blood pressure of the hypertensive patient. Leveille (1977) stated that everyone with hypertension will not benefit by a reduction of salt in the diet.

Recommendations for Daily Salt Intake

There is no scientific evidence that the 10-12 grams of salt as a daily intake level should be changed (Salt Institute, 1980). The first edition of Dietary Goals for the United States (1977a) recommended daily salt intake to be 3 grams per day. The second edition of the Dietary Goals for the United States (1977b) increased the recommended salt intake to approximately 8 grams per day.

The 1974 National Academy of Sciences Recommended Dietary Allowances stated that there was little direct evidence to support the hypothesis

that hypertension can be produced in normotensive man on the average American daily intake of salt (6-18 grams). Evidence presented in the 1980 Recommended Dietary Allowances was still circumstantial about the relationship between salt intake and the development of hypertension in man.

The U.S. Senate Select Committee on Nutrition and Human Needs (1977b) recommended that all persons in the United States significantly reduce salt intake as one way to reduce the development of hypertension.

The Dietary Goals for the United States (U.S. Senate Select Committee on Nutrition and Human Needs, 1977b) recommended that the daily diet contain no more than 8 grams of salt. This could be achieved by eliminating highly salted processed foods, sodium-containing condiments, and the elimination of salting of foods at the table so that the daily diet contained no more than 5 grams of added salt. An additional 3 grams of salt was allowed from natural sources.

Harper (1978) stated that the Senate recommendations seemed preconceived and based on inconclusive evidence. Meats with 45 milligrams of sodium per 100 kilocalorie serving were listed as high salt foods, whereas whole wheat bread with 216 milligrams of sodium per 100 kilocalorie serving was listed as a moderately high salt food.

Hegsted (1978) defended both editions of the government dietary guidelines concerning salt reduction for the general population by stating that reduced salt intakes can be therapeutic for many hypertensives. Cullen et al. (1978) also agreed with the revised edition Dietary Goals for the United States recommendation that lowering of dietary salt

intakes could be beneficial to persons with high blood pressure. These authors stated that such a lowering of salt intake could result in a reduction of the incidence of hypertension among persons with genetic predisposition for the disorder.

Dietary Guidelines for Americans (U.S.D.A. and U.S.D.H.E.W., 1980) recommended that all Americans reduce sodium intake. These Guidelines did not recommend a minimum daily amount of dietary sodium. The Food and Nutrition Board of the National Academy of Sciences (1980) recommended in Toward Healthful Diets, that Americans use salt in moderation. An adequate but safe daily salt intake level between 3 and 8 grams was suggested.

The use of nutritional therapy for individuals at risk, or for those who have developed a disease that can be treated with dietary changes, is different from providing nutrition information and guidelines for the population in general. Available evidence indicates that excessive salt intake can induce hypertension in a segment of the population (Tobian, 1979a).

Some (Dahl, 1972; Hegsted, 1978; U.S. Senate Select Committee on Nutrition and Human Needs, 1977a, 1977b) have suggested that the amount of salt be reduced in the diet of the general American population, not just for those individuals who have high blood pressure.

White and Crocco (1980) proposed that a major public health information program would be required before the general American population would significantly reduce its salt intake.

Until more evidence is available to support the theory that salt in the American diet is a factor in causing hypertension, it does not seem

appropriate to recommend either there be a reduction in salt consumption for all Americans, or a reduction in the sodium content of foods (U.S. Senate, Surgeon General's Report on Health Promotion and Disease Prevention, Healthy People: Background Papers, 1979).

Analysis Of Print Media

Content Analysis

Content analysis is a method of studying and analyzing communications in a systematic, objective, and quantitative manner to measure variables (Berelson, 1952). The classic definition of the communications process between humans is who says what to whom, how, and with what effect. Communication content, the what of communication, refers to the meaning of the message and the symbols used to relay the message (Berelson, 1952). Content analysis is a method which can be used to investigate the what.

Content analysis has been used to expose propaganda techniques - deliberate attempts to influence attitudes or behaviors on controversial issues (Berelson, 1952). Content analysis is regarded as an unobtrusive method of investigation. Because content analysis research is conducted on existing documents, these documents may be considered free from the investigator's biases in their preparation.

Content analysis is also a method of observation. Use of this method allows the researcher to ask questions about communication content and to learn indirectly about the writers and readers of those

communications (Kerlinger, 1964). Numerous publications by recognized authorities are available which provide guidelines and methods for conducting content analysis (Berelson, 1952; Bowers, 1970; Budd et al., 1967; Carney, 1972; Holsti, 1969; Pool, 1959; Saporta and Sebeok, 1972; Stone et al., 1966).

Berelson (1952) outlined three categories of research questions which can be investigated through content analysis: 1) questions concerning the producers of content - their intelligence, intentions, psychological state; 2) questions concerning the audience content - their attitudes, interests and values; and 3) questions concerning the characteristics of content - its substance (what is said) and its form (how it is said).

The third category of research questions proposed by Berelson (1952) is used most frequently in communication investigations. The investigator asks questions that will allow him to describe the message, without reference to either the intentions of the writer or the effect on the audience (Holsti, 1969).

The problem defined by the investigator and the question he wants to answer determine the questions asked about the communication material. Some categories of general questions from which the investigator can build his content analysis questions have been established. These categories of questions are usually meaningless (Berelson, 1952) because of the variety of topics which can be investigated as well as the variety of investigators and their interests.

To be valuable to the investigator in his research, the data obtained from using content analysis must be compared with other data (Holsti, 1969). Several comparisons of the data are possible, depending upon

what is being investigated: 1) Content communication characteristics between two or more sources can be compared; 2) Certain standards for accuracy can be established to which content data are then compared; 3) Comparisons of the content can be made for messages from different times or from different sources.

A fourth comparison of content data can be made using contingency analysis. Contingency analysis seeks to determine the probability that a specific word or phrase will appear when other specified words are present. Interest in contingency analysis as a method of describing communication has increased over counting the frequency with which words are present in the communication (Pool, 1959).

Sims (1977) used content analysis to examine message content, the form, and the writers of nutrition books. In comparing these characteristics, she focused her content investigation primarily on the persuasability and writing style of the message.

Printed Nutrition Information Materials for the Public

Hicks (1977) stressed the fact it is crucial for information in nutrition education materials be accurate. It is difficult for the non-nutrition professional to judge easily the quality and accuracy of the information in these publications. Several methods are available for the evaluation of the accuracy of printed instructional materials (Table 2).

Sims (1977) evaluated the communication characteristics of recommended and non-recommended nutrition books. Several evaluation methods were

Table 2. Evaluation of nutrition information materials developed for non-professionals

Investigator	Evaluated Categories	Type of Materials
Anderson et al. (1980)	Instructional aids, format, content readability, stereotyping	For pregnant teenagers
Bobbitt (1980)	Purpose, appeal, logic, appropriateness, accuracy, lay-out, illustrations, color, vocabulary, source	Nutrition education materials
Dairy Council of Michigan (1973)	Appeals, documentation, logic, recommendations, information	Author, article, book
Hicks (1977)	Content, method	Nutrition education materials
Leonhard-Spark (1980)	Form, appeals: nutrition, socioeconomic, psychological	Food advertisements in women's magazines
McNutt and McNutt (1978)	Grammatical patterns	Nutrition information in popular press
Sims (1977)	Author, persuasion, sentence type, readability, book characteristics	Nutrition books

used before conclusions about the materials were made. The Dairy Council of Michigan prepared "Guidelines" (1973) for the high school teacher to use in evaluating nutrition authors, articles and books. This checklist was developed as an indicator only of the reliability of the nutrition material, not the accuracy. McNutt and McNutt (1978) based an evaluation of nutrition information in the popular press on an analysis of grammatical patterns. Bobbitt (1980) developed a ten-question, fifty-point evaluation form for nutrition education materials. Anderson et al. (1980) evaluated nutrition publications targeted for pregnant teenagers and used five categories for rating the material. Leonhard-Spark (1980) used content analysis to evaluate nutrition appeals in the food advertisements in women's magazines.

Each of the above researchers developed a set of guidelines specific for the materials evaluated. None of them provided details for the analysis of the nutrition information in the popular print media for accuracy as presented to the reader.

Summary

Hypertension is a major health concern in America. This condition can be affected in some individuals by dietary changes. The print media provide information on many health topics. This information is used by some individuals to make decisions about their health and nutrition practices. Little evidence is available that documents the accuracy and the journalistic techniques with which nutrition information about hypertension is presented in the print media.

The following study was designed to document objectively what nutrition information related to hypertension appeared in recent popular print media and the accuracy of that information. The objectives of the study included:

1) Determination of the physical and reading characteristics used most frequently in the presentation of nutrition (salt-related)/hypertension information in the popular print media.
2) Determination of the accuracy of the nutrition/hypertension information in the popular print media.
3) Determination if differences exist between either the accuracy or presentation of nutrition/hypertension information in the popular print media and the author of the article.
4) Determination if differences exist between either the accuracy or presentation of nutrition/hypertension information in the popular print media and the type of publication in which the article appeared.
5) Development of a protocol for the evaluation of nutrition/hypertension information in the popular print media.

An objective analysis of nutrition information in the popular print media would help nutrition professionals understand what the articles tell the consumer. The nutrition professional could act to either correct misinformation at the media source, or use the media to reinforce consumer knowledge about nutrition and health.

METHODS AND PROCEDURES

Preliminary Work

Topic Selection

A preliminary investigation of two nutrition and health topics in the recent popular press (1975 - 1978) was done to determine the number and types of articles that were available for study. The number of article titles which contained specific nutrition and health words were tabulated from the cumulative indexes for the Chicago Tribune and The Washington Post (Table 3).

Topics indexed under "sugar" and "sugar in health" included the saccharin ban issue and a variety of health conditions such as dental caries and lactose intolerance. The articles indexed under the "salt" headings focused on hypertension and blood pressure as health issues. The greater number of potential salt/hypertension oriented articles available in this preliminary survey of the indexed titles resulted in the selection of salt and hypertension as the topic for study.

Table 3. Number of articles in the cumulative index for 1975-1978 of the Chicago Tribune and The Washington Post by selected topic

Year	Topics				
	Sugar	Sugar in Health	Salt	Salt in Health	Hypertension
1975	0/2[a]	4/1	0/0	0/1	0/0
1976	0/1	0/0	1/0	0/1	1/0
1977	3/0	0/2	1/0	0/4	1/4
1978	1/0	0/1	0/0	1/1	1/1
Total	4/3	4/4	2/0	1/7	3/5

[a]First number indicates the number of articles listed in the Chicago Tribune/second number indicates the number of articles in The Washington Post.

Article Selection Criteria

Articles selected for study had one of the following words in either the main title or subtitle: salt, sodium, hypertension, blood pressure, dietary eating habits or patterns, dietary goals, diet, heart disease, sea salt. The same word criteria for selection of advertisements were used.

Both original and syndicated articles were included. In the case of duplication of syndicated articles, only one article was evaluated.

Time Period of Print Media Used in Study

Newspapers, popular consumer magazines and the print advertisements that appeared in both publications for the years 1975, 1976, 1977 and 1978 were selected to review for articles to meet the selection criteria.

Newspaper Selection

Five large city newspapers were selected as sources of articles in this study. They were: Chicago Tribune, Los Angeles Times, The New Orleans Times-Picayune, The New York Times, and The Washington Post. These newspapers were selected because of their availability in the Michigan State University Library, both cumulatively indexed and on microfilm. Also, these newspapers are publications from a broad geographic area of the United States.

The Detroit Free Press and the Detroit News were considered for inclusion in the study. They are on microfilm at the Michigan State University Library, but they were not cumulatively indexed until 1979.

A phone call and letter to the Detroit Free Press office requesting assistance in locating articles on the subject from 1975 to 1978 resulted in two photocopied articles from their newspaper. The articles were undated, but syndicated. Upon further investigation they were discovered to be duplicates of articles already selected for review that had appeared in other newspapers. Because of the unverifiability of this material, inclusion of these newspapers in the study was rejected.

The Christian Science Monitor and The Wall Street Journal were reviewed for the selected topic for the years 1975 to 1978 and were eliminated from the study since no articles which met the selection criteria were found.

Another newspaper, the National Enquirer, was selected to be reviewed for articles. This newspaper was included in the study because of the frequent appearance of articles on diet and health issues. This newspaper did not have a cumulative index. A search was done of each issue's front page headlines and inside page headlines for titles of articles that met the selection criteria.

Sixty-five newspaper articles met the selection criteria and were used in this study. These articles are listed by source and title in Appendix A.

Magazine Selection

Magazine articles which met the selection review criteria were selected from the Reader's Guide to Periodical Literature for the years 1975 to 1978. Three magazines (Family Circle, Prevention, Woman's Day)

not indexed in the Reader's Guide to Periodical Literature were also selected for review because of the frequent appearance of nutrition and health information articles in these publications and their general availability to the public. The Table of Contents of each issue of Family Circle, Prevention, and Woman's Day for 1975-1978 was reviewed for articles meeting the selection criteria.

Thirty-six magazine articles met the selection criteria and were used in this study. These articles are listed by source and title in Appendix B.

The professional publication for dietitians and nutritionists, the Journal of The American Dietetic Association, was reviewed for articles on the topic of salt and hypertension for the years 1971 to 1978. Any articles appearing in this publication were to be used as a comparison between writing characteristics used by nutrition professionals and those used by journalists. The broadened years reviewed reflected the time span that occurs between research being reported and the practical application of the results. No articles were found which met the selection criteria and this professional publication was not included as a source of study articles.

Advertisement Selection

Advertisements were selected from the previously cited publications which contained articles that met the criteria for inclusion in the study. Advertisements were to meet the same selection criteria for words in the headings as in the headings for articles. In the case of

multiple sectioned newspapers, advertisements that appeared in the same section as the selected article were reviewed. Classified advertisements were excluded.

Number of Articles and Advertisements Available for Study

Based on the criteria for article and advertisement selection, 101 articles and 7 advertisements were available for this study (Table 4). Articles and advertisements were itemized according to source and year (Tables 5 and 6).

This preliminary research found only seven advertisements which met the selection criteria. These seven advertisements were for blood pressure measuring devices and health information books. Because of the small number of advertisements suitable for study, the inclusion of advertisements was dropped from this investigation.

One hundred and one print media articles met the selection criteria. This included 65 articles from 6 newspaper publications and 36 articles from 22 magazine publications (Table 7).

Development Of The Research Protocol

Evaluation Form

Content analysis was used to meet the objectives of this study. Standardized categories of questions for evaluating nutrition information by content analysis were not available. An original evaluation form for this study was developed by this investigator. The general framework was based on the patterns described by Berelson (1952), Flesch (1948),

Table 4. Summary count of articles and advertisements available from selected newspapers and magazines with titles on salt and hypertension, 1975-1978

	Newspapers	Magazines	Advertisements	Total
1975	11	2	5	18
1976	10	5	1	16
1977	22	16	-	38
1978	22	13	1	36
Total	65	36	7	108

Table 5. Number of articles and advertisements on salt and hypertension available from newspapers, 1975-1978

Newspaper	Year				Total
	1975	1976	1977	1978	
Chicago Tribune	0[a]	2	1	3	6
Los Angeles Times	0	1	2	5	8
National Enquirer	8 (5)	3 (1)	9	8	28 (6)
The New Orleans Times-Picayune	2	1	6	0	9
The New York Times	0	2	1	4	7
The Washington Post	1	1	3	2	7
Total	11 (5)	10 (1)	22	22	65 (6)

[a]Number of articles which met selection criteria (number of advertisements which met selection criteria).

Table 6. Number of articles and advertisements on salt and hypertension available from magazines, 1975-1978

Newspaper	Year				Total
	1975	1976	1977	1978	
BioScience	0[a]	0	0	1	1
Better Homes and Gardens	0	0	1	0	1
Consumer's Report	0	0	1	0	1
Family Circle	0	0	0	0	0
Family Health	0	0	0	1	1
Farm Journal	0	0	1	0	1
Glamour	0	0	0	0	0
Good Houskeeping	0	0	0	0	0
House and Garden	0	0	2	0	2
Ladies' Home Journal	0	0	1	0	1
Mademoiselle	0	1	0	0	1
National Geographic	0	0	1	0	1
Newsweek	0	1	0	0	1
Organic Gardening and Farming	0	0	1	1	2
Parents' Magazine	0	1	0	0	1
Prevention	2	1	3	7 (1)	13 (1)

Table 6 (cont'd)

Newspaper	Year				Total
	1975	1976	1977	1978	
Reader's Digest	0	0	0	1	1
Science	0	1	0	0	1
Science Digest	0	0	0	1	1
Science News	0	0	1	1	2
Vogue	0	0	3	0	3
Woman's Day	0	0	1	0	1
Total	2	5	16	13 (1)	36 (1)

[a]Number of articles which met selection criteria (number of advertisements which met selection criteria).

Table 7. Print media sources and number of articles on salt and hypertension

Media Source of Articles	(n)
Newspapers	
Chicago Tribune	6
Los Angeles Times	8
National Enquirer	28
The New Orleans Times-Picayune	9
The New York Times	7
The Washington Post	7
Magazines	
BioScience	1
Better Homes and Gardens	1
Consumer's Report	1
Family Health	1
Farm Journal	1
House and Garden	2
Ladies' Home Journal	1
Mademoiselle	1
National Geographic	1
Newsweek	1
Organic Gardening and Farming	2
Parents	1
Prevention	13
Reader's Digest	1
Science	1
Science Digest	1
Science News	2
Vogue	3
Woman's Day	1
Total	101

Gunning (1952), and Holsti (1969). The Evaluation Form of Print Media Articles on Salt and Hypertension (Appendix C) is divided into three parts. Part I in Appendix C is "Physical Characteristics of the Article." Part II of Appendix C is "How it is Said" and Part III is "What is Said." Instructions for the use of the evaluation form are given in Appendix D.

The evaluation form was developed so that information could be recorded by pencil onto optical scanning sheets (NCS Trans-Optic E. F5709-54321) for computer analysis. Each data sheet had the capacity to record 230 separate data elements (questions) with 10 answer options within each element.

The investigator used, in particular, the Lasswell et al. (1952) communication model (Figure 1) to develop the communication content model for the study of the print media's treatment of nutrition information (Figure 2).

Circulation Information

Ayer Directory of Publications for the years 1975 to 1978 was reviewed and circulation data tabulated for newspapers (Appendix E) and magazines used in the study (Appendix F). The circulation sizes of the publications which contained suitable articles ranged from approximately 91,000 to 19 million readers per issue. The 1975 - 1978 editions of the Editor and Publisher Yearbook were used to obtain the cost per issue of the newspapers.

Figure 1. Lasswell et al. (1952) communication model adapted for this study.

Who	What Message	Channels	To Whom	Effect
Author of article	-Facts	-Print media	Readers of newspapers and magazines	-Explain
	-Readability	-Newpapers		-Misinform
		-Magazines		-Give inaccurate facts
				-Incite to act
				-Confuse (by disagreement between sources)

Figure 2. Communication model for the study of print media's treatment of nutrition information

Who	What	How	Where	Audience	Effect
Author	Nutrition Information		Newspapers		
-Unsigned	-Nutrition	-Illustrations	-Chicago Tribune -Los Angeles Times	-Home, garden, woman's service	-To explain
-Nutritionist	-Hypertension causes effects treatments	-Information (technique)	-National Enquirer -The Washington Post		-To misinform
-Doctor		-Statement form	-The New York Times	-Family, health, science	-To act
-Journalist		-Emotion	-The New Orleans Times-Picayune		-To mislead
-Other	-Authority	-Jargon	Magazines	-Current news	
	-Tone		-Better Homes and Garden	-General interest, editorial	
	-Action		-Consumer's Report		
	-Value		-Family Health		
			-Farm Journal		
			-House and Garden		
			-Ladies' Home Journal		
			-Mademoiselle		
			-National Geographic		
			-Newsweek		
			-Organic Gardening		
			-Parents		
			-Prevention		
			-Science		
			-Science Digest		
			-Science News		
			-Vogue		
			-Woman's Day		

Theme of Publication

A limited number of articles were available for study from a specific publication in the 1975 - 1978 period. For calculation purposes, publications were classified into five theme categories based on readership interests: 1) Home/garden/woman's service, 2) Family/health/science, 3) Current news, 4) General interest/editorial, and 5) other. A list of the themes and the publications which were in each theme category is in Appendix G.

Measurement of Article Length

The length of articles in magazines and newspapers varies from a few lines of a single column to several pages. The number of columns on a page varies from 3 to 8 depending upon the publication. Because a variety of publications was used as sources for articles, accurate descriptions of length and article size, consistent for all publications, were needed. The width and depth (length) of each article was measured in inches to calculate total article space. This measurement included lines of copy and the space occupied by any graphics related to the article. The procedure for article measurement is included in Appendix D.

Message Characteristics

Counting Criteria

Two questions (22 and 23) on the Evaluation Form of Print Media Articles on Salt and Hypertension (Appendix C) required the calculation of the average number of words per sentence and average number of sentences per paragraph for each article. These questions asked if average sentence length of an article was 20 words or less (short sentence) and if the average number of sentences per paragraph was 4 or less (short paragraph).

To count every word in every sentence and every sentence in every paragraph to calculate the average sentence and paragraph length for each article would be a time-consuming process. An alternate method of calculation to obtain the average of the sentence and paragraph length of each article was developed. Ten magazine and ten newspaper articles on salt and hypertension from years not included in the study were selected to evaluate an alternate method of counting.

Every word per sentence and the sentences per paragraph in each of these test articles were counted and averaged for each article. A random sample of paragraphs and sentences from each article was then used to calculate average sentence and paragraph length in each article. The size of the random sample of sentences and paragraphs was determined by the total number of paragraphs, sentences, and media source of the article (Tables 8 and 9).

For each article, the average of the random sample of words per sentence was within ± 3 words of the total words per sentence average.

Table 8. Number of random sample paragraph selections necessary to calculate average sentences per paragraph (± 0.5 sentences) in magazine and newspaper articles ($p<0.1$)

Media	Total Number of Paragraphs in Article										
	5	10	15	20	25	30	35	40	45	50	55
Magazines	5[a]	8	11	13	15	16	18	19	20	21	22
Newspapers	4	6	8	9	9	10	10	11	11	11	11

[a]Select by random sample (n) of paragraphs based on total number of paragraphs in article and media.

Table 9. Number of random sample sentence selections necessary to calculate average words per sentence (± 3 words) in magazine and newspaper articles ($p<0.1$)

Media	Total Number of Sentences in Article										
	10	30	50	70	90	110	130	150	170	190	210
Magazines	7[a]	12	14	16	16	17	17	18	18	18	18
Newspapers	8	15	19	21	22	23	24	25	25	26	26

[a]Select by random sample (n) of sentences based on total number of sentences in article and media.

The average of the random sample of sentences per paragraph was within ± 0.5 sentences of the total sentences per paragraph average of the article.

Both the total and random sample averages were from the same population of newspaper or magazine articles. The reliability between the averages obtained with total and random sample counts (Appendices H, I, J, K) was confirmed at the $p < 0.5$ level with the Wilcoxon paired signed rank test.

For the articles in this study, the average number of sentences per paragraph and words per sentence was calculated based on random sample sizes in Table 8 and 9.

Fog Index

Question 27 on the Evaluation Form of Print Media Articles on Salt and Hypertension (Appendix C) required the counting of 100 words to determine the reading level of the article. The first 100 words after the title of the article were counted. Appendix D outlines in detail the method for calculating the Fog Index of the article.

Message Accuracy

Salt and Hypertension Facts

Facts about salt and hypertension used as a standard for reputable information were taken from the following list of publications. A complete outline of the facts used in the study is given in Appendix L.

American Heart Association 1977. Facts about potassium.

American Medical Association 1977. Your blood pressure.

Bennion, Marion 1979. Hypertension. In: Clinical Nutrition. New York: Harper and Row. pp. 506-517.

Biné, Rene 1977. Cardiology. In: Nutritional Support of Medical Practice. H. Schneider, C. Anderson and D. Coursin (eds.) Hagerstown, Md.: Harper and Row Publishers, Inc. pp. 254-258.

High Blood Pressure Information Center 1979. Watch your blood pressure. Bethesda, Md.

Krause, Marie and L.K. Mahan 1979. Nutritional care for patients with cardiovascular disease. In: Food, Nutrition and Diet Therapy. 6th ed. Philadelphia: W.B. Saunders, Co. pp. 579-605.

Mikkola, Margaret 1978. The cardiovascular system. In: Nutrition in Clinical Care. Rosanne Howard and Nancie Herbold (eds.) New York: McGraw-Hill, Inc. pp. 317-347.

Pretest of Forms

Four nutritionists evaluated four articles using the Evaluation Form of Print Media Articles on Salt and Hypertension (Appendix C). Based on a comparison of their answers with this investigator's answers, refinements and alterations were made in the Evaluation Form (Appendix C) and the Instructions for Using the Evaluation Form (Appendix D). The revised form was not tested a second time.

Procedure

The investigator, Barbara Jacobs, reviewed all articles using the Evaluation Form of Print Media Articles on Salt and Hypertension (Appendix C) according to the procedures outlined in the Instructions for Using the Evaluation Form (Appendix D). Answers to evaluation Evaluation Form of Print Media Articles on Salt and Hypertension (Appendix C) according to the procedures outlined in the Instructions for Using the Evaluation Form (Appendix D). Answers to evaluation

questions were recorded on a work sheet and then transferred to a computer sheet. Each article was coded on both a worksheet and computer scan sheet.

Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (Nie et al., 1975) and the Michigan State University CDC 6500 computer. Frequencies were calculated on all variables. Analysis of variance was performed to detect significant differences. The level of significance used for statistical analysis was at the $p < 0.05$ level.

Seventeen of the 101 articles did not contain information appropriate to questions in the Evaluation Form for Parts II and III (Appendix C). Unless otherwise indicated, 84 articles were used for data analysis of message characteristics (Part II) and message accuracy (Part III). These articles are listed by source in Appendix M.

Data related to message characteristics (Part II) were analyzed in two ways. First, characteristics present in the media were tabulated as the combined media and according to source (magazine or newspaper). These data were expressed as 1) percentage of the 84 articles, and as 2) a percentage of magazine articles (n = 34) or a percentage of the newspaper articles (n = 50).

Second, message characteristics were tabulated according to the theme of the publication in which the article was located. Characteristics were calculated as a percentage of the 84 articles, rather than as a percentage of each theme category.

Data were rounded to whole numbers. Values above 4 were rounded to the next highest whole number, and values less than 5 were rounded to the next lowest whole number.

Definition of Terms

Terms used in this study are defined in Appendix N.

RESULTS

Data obtained from 101 selected newspaper and magazine articles during the years 1975 - 1978 were analyzed for physical characteristics of the print media. Data obtained from 84 selected newspaper and magazine articles were used for data analysis of message characteristics and message accuracy.

Physical Characteristics of the Print Media

Physical characteristic data were analyzed for the 101 articles that met the selection criteria. Distribution of the articles by media source is shown in Table 10. The largest percentage of articles (64%) were from newspapers, and approximately 36% of the articles were from magazines.

Table 10. Print media sources of articles

Media source of articles	(n)	% of articles
Magazine	36	36
Newspaper	65	66
Combined media	101	100

A composite picture of the physical characteristics for the 101 articles and the 36 magazine and 65 newspaper articles is given in Table 11.

The greatest percentage of articles appeared in the print media in the years 1977 (39%) and 1978 (35%). The percentage of articles that appeared in the first two years of the study period was 13% in 1975 and 14% in 1976 (Table 11).

Thirty-six magazine articles were used in this study. The percentage of magazine articles that appeared in 1975 and 1976 was 6% and 14%, respectively. In the latter two years of the study, 1977 and 1978, 44% and 36%, respectively, of the magazine articles appeared (Table 11).

Of the 65 newspaper articles in the study, 17% appeared in 1975, 14% in 1976, 35% in 1977, and 34% in 1978.

Articles appeared most frequently in both media in the November (15%), January (14%), and February (11%) issues of the publications. Magazines contained articles on salt and hypertension most frequently in January, May, August and November (14% each). Newspapers most frequently contained articles in January, February, and November (15%) (Table 11).

Approximately 52% of the articles were in publications with a reader circulation per issue of 1.5 million or more.

The cost of a single issue that contained an article was most frequently $0.60 or less (65%). Most newspapers (98%) cost $0.60 or less while only 6% of the magazines could be obtained at this cost. More than half (67%) of the magazines that contained an article cost between $0.60-$1.00 per issue (Table 11).

Table 11. Physical characteristics of print media articles on salt and hypertension, 1975-1978

Characteristic	(n)	Source of Articles % of Media		
		Combined Media	Magazines	Newspapers
Year				
1975	(13)	13	6	17
1976	(14)	14	14	14
1977	(39)	39	44	35
1978	(35)	35	36	34
Total[a]	(101)	100%	100%	100%
Month				
January	(14)	14	14	15
February	(12)	11	6	15
March	(10)	10	10	9
April	(8)	8	6	8
May	(9)	9	14	6
June	(8)	8	8	6
July	(6)	6	3	9
August	(5)	5	14	--
September	(1)	1	3	--
October	(7)	7	8	6
November	(15)	15	14	15
December	(6)	6	--	9
Total	(101)	100%	100%	98%
Circulation/Issue				
0-500,000	(15)	15	14	15
500,001-1,000,000	(26)	26	14	32
1,000,000-1,500,000	(8)	8	8	8
>1,500,000	(52)	52	64	45
Total	(101)	101%	100%	100%
Cost per Issue ($)				
0.60 or less	(66)	65	6	98
0.61-1.00	(25)	25	67	2
1.00-2.00	(7)	7	20	--
>2.00	(3)	3	8	--
Total	(101)	100%	101%	100%
Frequency of Issue				
Daily	(37)	37	--	57
Weekly	(33)	33	14	43
Monthly	(31)	31	86	--
Total	(101)	101%	100%	100%
Theme of Publication				
Home/garden/woman's service	(11)	11	31	--
Family/health/science	(21)	21	58	--
Current News	(30)	30	--	46
General Interest/ Editorial	(38)	38	8	54
Other	(1)	1	3	--
Total	(101)	101%	100%	100%
Article Length (Inches)				
0-100	(74)	73	36	94
101-200	(14)	14	31	5
>200	(13)	13	33	2
Total	(101)	100%	100%	101%
Day of Week				
Sunday	(10)	Na	Na	15
Monday	(2)	Na	Na	3
Tuesday	(9)	Na	Na	14
Wednesday	(6)	Na	Na	9
Thursday	(6)	Na	Na	9
Friday	(1)	Na	Na	2
Saturday	(3)	Na	Na	5
Not Applicable (Na)	(28)			43
Total	(65)			100%
Section of Publication				
First Third	(33)	33	22	38
Second Third	(36)	36	44	31
Last Third	(32)	32	33	31
Total	(101)	101%	99%	100%

[a]Totals may not equal 100% due to rounding.

The theme or readership interests of publications which contained salt and hypertension articles were classified. Articles were located in general interest/editorial (38%), current news (30%), family/health/science (21%), and home/garden/woman's service (11%) publications.

Approximately three-fourths of the articles had an average length of less than 100 inches. Almost all (94%) of the articles in newspapers occupied fewer than 100 inches. Articles in magazines were distributed among a small space of fewer than 101 inches (36%), medium space of 101-200 inches (31%), and space greater than 200 inches (33%) (Table 11).

Newspaper articles appeared most frequently in either the Sunday (15%) or Tuesday (14%) editions (Table 11).

The location of articles was balanced among the front (33%), middle (36%), and back (32%) sections of the publication. Neither magazines nor newspapers seemed to favor one section in which to locate the article (Table 11).

More than half of the articles (68%) did not have accompanying visuals (Table 12). This lack of visuals was more common in newspapers (82%) than magazines (44%). The visuals used most often in both media were photographs (22%).

Articles in newspapers most often used a person (11%) as the subject of the visual. Articles in magazines used people (22%), food (11%), or a combination of subjects (14%) in the visual (Table 12).

Almost half (44%) of the articles were selected because of the use of the words "blood pressure" in the title. "Blood pressure" was also the most frequently used title word in magazines (41%) and newspapers

Table 12. Type and subject of visuals used in print media articles on salt and hypertension

Visuals	(n)	Source of Articles % of Media		
		Combined Media	Magazines	Newspapers
Type				
None used	(69)	68	44	82
Combination of photographs, drawings, tables	(5)	5	8	3
Photograph	(22)	22	39	12
Drawing	(2)	2	3	2
Table	(3)	3	6	2
Total[a]	(101)	100%	100%	100%
Subject				
Person	(15)	15	22	11
Food	(8)	8	11	6
Combination of person, food	(5)	5	14	--
Other	(4)	4	8	2
Not applicable	(69)	69	45	82
Total	(101)	100%	100%	100%

[a]Totals may not equal 100% due to rounding.

(46%) (Table 13). "Salt" was the next most frequently used word (23%) in the titles of the combined media in this study (Table 13).

"Salt" appeared most frequently in titles of articles in publications with news themes (12%), while articles in general interest/editorial and family/health/ science publications used the words "blood pressure" most frequently (21% and 12% respectively).

Tables 10, 11, 12, and 13 provide a profile of the physical characteristics of 101 popular print media articles on salt and hypertension used in this study. In general, the articles appeared in large circulation publications with diversified reader interest themes, cost less than $0.60 an issue, occupied less than 100 inches, and were infrequently accompanied by visuals.

Message Characteristics

Eighty-four articles were used in the analysis of selected message characteristics in print media articles on the topic of salt and hypertension.

Readability Characteristics

Seventy-five percent of the articles contained sentences of 20 words or less (Table 14). Approximately 21% of those articles with sentence length less than 20 words were located in news publications, 20% were located in general interest/editorial publications, and 19% were located in family/health/science publications.

Table 13. Title words used in print media articles on salt and hypertension categorized by media source and theme of publication

Title Word	(n)	Source of Articles % of Media			Theme of Publication % of Combined Media[a]				
		Combined Media	Magazines	Newspapers	Home/Garden/ Woman's Service	Family/ Health/ Science	Current News	General Interest/ Editorial	Other
Salt	(23)	23	31	19	4	5	12	1	1
Sodium	(2)	2	6	--	1	1	--	-	-
Hypertension	(7)	7	8	6	1	2	3	1	-
Blood Pressure	(45)	44	41	46	2	12	10	21	-
Dietary eating habits/pattern	(11)	11	11	11	2	1	2	6	-
Diet	(9)	9	3	12	1	-	3	5	-
Heart Disease	(4)	4	-	6	-	-	-	4	-
Total[b]	(101)	100	100	100					

[a]Articles calculated as percentage of 101 articles.

[b]Totals may not equal 100% due to rouding.

Table 14. Readability characteristics of print media articles on salt and hypertension.

Characteristics	(n)	Source of Articles % of Media			Theme of Publication % of Combined Media[a]				
		Combined Media	Magazines	Newspapers	Home/Garden/ Woman's Service	Family/ Health/ Science	Current News	General Interest/ Editorial	Other
Sentence Length 20 words/sentence	(63)	75%	82%	70%	13	19	21	20	1
Paragraph Length 5 sentences/paragraph	(75)	87	77	98	10	19	35	25	1
Title rephrased	(72)	85	74	96	11	16	33	25	1
Meaningful numbers	(41)	50	59	42	8	16	18	7	-
Incident used	(76)	91	94	88	12	23	35	20	1
Fog Index									
6-7 grade	(5)	6	6	6	1	1	--	4	-
>7-9 grade	(20)	26	38	14	6	8	4	5	1
>9-11 grade	(11)	13	12	14	--	5	4	5	-
>11-12 grade	(19)	22	21	24	2	4	8	8	-
>12th grade	(29)	33	24	42	4	6	20	5	-

[a]Articles calculated as a percentage of 84 articles.

Eighty-seven percent of the articles contained less than 5 sentences per paragraph. This characteristic was prominent in newspapers (98%) and publications with news themes (35%) (Table 14).

The title was rephrased in the first four paragraphs of the articles in 85% of the articles in the combined media. Articles in newspapers and articles in publications with news themes frequently exhibited this title repetition characteristic (96% and 33%, respectively).

The use of household equivalents for milligrams of sodium or a comparison of a normal blood pressure values and a high blood pressure were examples used in half the articles to make numbers understandable to the reader. Table 14 shows that articles in family/health/science and news publications most frequently translated the scientific numbers into familiar, understandable terms.

The majority (91%) of the 84 articles contained at least one incident, example, or real-life situation about hypertension or diet to illustrate a point made in the article. Articles in news publications referred to someone who attended a meeting about hypertension, an individual's diet or a treatment of hypertension as incidents.

A third of the articles (33%) had a Fog Index above the 12th grade reading level. Almost half (42%) of the articles in newspapers had a reading level above the 12th grade (Table 14). These newspapers included The New York Times, Chicago Tribune, and The Washington Post.

A fourth of the articles (26%) were at the 7-9th grade reading level. Articles in magazines (38%) and articles written for the family/health/science publications (8%) and the home/garden/woman's service publications (6%) were most often at this lower reading level.

The readability of an article was determined by the presence of six characteristics: sentence length, paragraph length, title rephrased, meaningful numbers, incident use, and Fog Index. An easy to read article contained fewer than 20 words per sentence, fewer than 5 sentences per paragraph, meaningful numbers, an incident, and a Fog Index less than 11. Seventy-five percent of the articles were classified as having an average readability with 4 or 5 of the evaluated readability characteristics (Table 15). No differences were found ($p < 0.05$) between the mean scores of readability characteristics and the theme of the publication in which the article appeared (Table 16).

Appeal Statements in the Articles

The presence, but not the accuracy, of eight characteristics determined the appeal or the appeal-to-action of the article to the reader. These characteristics include: statement specificity, title relevance, study verifiability, better health, longer life, "other" incentive, physical threat, and "other" intimidation. The appeal characteristics were divided into three statement categories: information, incentive and intimidation.

Information characteristics included specific statements about salt, hypertension, or diet, made without conditional clauses or embellishment. Examples of specific statements: "Even today the manifold mechanisms involved in high blood pressure are only partially understood." and "Americans eat 6 to 18 grams (of salt) a day." Examples of nonspecific statements: "Whole, natural foods enhance life; processed foods

Table 15. Level of readability based on number of reading characteristics in print media articles on salt and hypertension

Readability Level	Number of Readability Characteristics	% of Articles
Easy	6	8
Average	4-5	75
Difficult	0-3	17
Total[a]		99%

[a]Total does not equal 100% due to rounding.

Table 16. Theme of publication and the readability of print media articles on salt and hypertension

Type of Publication[a]	(n)	Readability[b]
Home/Garden/Woman's Service	(11)	4.5 ± 0.7[c]
Family/Health/Science	(20)	4.5 ± 0.7
Current News	(30)	4.4 ± 0.9
General Interest/Editorial	(22)	4.2 ± 0.9

[a]Publication category "other" deleted for statistical calculations.

[b]No significant differences in mean scores at $p<0.05$.

[c]mean $\pm$ standard deviation.

flirt with illness." and "Knowing that fruits and vegetables are the best sources of potassium, could that be part of the reason why vegetarians have low blood pressure?" Approximately one-fourth of the articles (27%) contained only specific statements (Table 17).

A statement was categorized as relevant if the information it contained related to the title of the article. Almost a third of the articles contained both relevant and irrelevant statements (Table 17). A discussion of harmful side effects of drugs in an article with a title about blood pressure readings was classified as irrelevant. More than half (63%) of the articles contained statements relevant to their titles.

Information statements in an article were verifiable if investigators or studies about hypertension could be contacted or located. About half (44%) of the information was verifiable by the presence of an institution's name or mailing address in the article. A smaller percentage of articles (38%) contained both verifiable and non-verifiable statements (Table 17).

The type of incentive given a reader to act to control blood pressure was categorized (Table 17). Statements about better health (67%) and longer life (37%) for individuals with normal blood pressure were used frequently as incentives.

The third appeal statement category evaluated the type of statements in an article which might cause the reader to act to control blood pressure because of fear of some consequences. Statements which threatened physical harm, i.e., early death, long years of suffering, were present in 32% of the articles. Other types of intimidation statements included drug dependency and mental depression due to hypertension (Table 17).

Table 17. Appeal characteristics in print media articles on salt and hypertension

Characteristics	(n)	Source of Articles % of Media			Theme of Publication % of Combined Media[a]				
		Combined Media	Magazines	Newspapers	Home/Garden/ Woman's Service	Family/ Health/ Science	Current News	General Interest/ Editorial	Other
Information									
Specific statements	(23)	27	27	28	4	5	17	1	1
Specific/nonspecific	(50)	60	59	60	7	16	17	20	-
Relevant to title	(53)	63	65	62	11	12	23	17	1
Relevant/irrelevant	(25)	30	27	32	1	10	11	8	-
Verifiable studies	(37)	44	56	36	5	17	16	7	-
Verifiable/nonverifiable	(32)	38	27	46	4	7	16	12	-
Incentive									
Better health	(56)	67	76	60	8	22	29	8	-
Longer life	(31)	37	47	30	4	16	14	4	-
Other[b]	(23)	27	44	16	4	10	4	6	-
Intimidation									
Physical	(27)	32	47	22	5	14	12	1	-
Other[c]	(3)	9	9	--	1	2	--	--	-

[a]Articles calculated as a percentage of 84 articles.

[b]Save money, avoid disability, have a slim figure.

[c]Drug dependency, mental depression.

An article which had five or more of the 8 information, incentive and intimidation statements was classified as having a high appeal level (Table 18). About half of the articles (51%) contained moderate appeal levels (2-4 characteristics) to the reader to act to control hypertension. Forty-four percent of the articles were classified as having high appeal.

There was a difference ($p < 0.05$) in the mean scores of appeal characteristics and the theme of the publication in which the article appeared. Family/health/science publications contained more appeal characteristics (mean = 5.4) than articles in general interest/editorial publications (mean = 3.2) (Table 19).

Articles contained a combination of the categories (information, incentive, intimidation) evaluated for appeal characteristics (Table 17). Many articles (60%) contained both specific and nonspecific statements about nutrition and hypertension. A third of the articles (30%) contained statements both relevant and irrelevant about nutrition and hypertension. Some articles (38%) contained statements that were traceable, and also untraceable to a source (Table 17).

Other Statement Characteristics

Several additional characteristics of statements in articles on salt and hypertension were evaluated (Table 20). The type of statement which appeared in an article was determined from a sample of eight paragraphs per article (see Appendix D for methods). Only the statement type which appeared most frequently in the sample was recorded. About 41% of the articles contained as the most frequent type of statement

Table 18. Level of appeal based on number of appeal characteristics in print media articles on salt and hypertension

Appeal Characteristics		% of Articles
Level	Number of Characteristics	
High	5-8	44
Moderate	2-4	51
Low	0-1	5
Total		100%

Table 19. Theme of publication and the appeal characteristics of the article

Type of Publication[a]	(n)	Appeal Characteristics[b]
Home/Garden/Woman's Service	(11)	4.4 ± 1.8[c]
Family/Health/Science	(20)	5.4 ± 1.7
Current News	(30)	4.4 ± 1.3
General Interest/Editorial	(22)	3.2 ± 1.5

[a]Publication category "other" deleted for statistical calculation.

[b]Significant difference in mean scores at $p<0.05$.

[c]Mean $\pm$ standard deviation.

Table 20. Additional statement characteristics used in print media articles on salt and hypertension

Characteristic	(n)	Source of Articles % of Media		
		Combined Media	Magazines	Newspapers
Statement Type				
Report, attributed	(34)	41	27	51
Report, unattributed	(16)	19	24	16
Inference	(26)	31	35	29
Authors' opinion	(3)	4	9	--
Imperative	(4)	5	6	4
No emotional words	(68)	81	74	86
Abbreviations w/ explanations	(26)	31	73	27
Abbreviations not applicable	(55)	66	38	84
Words and terms understandable from text	(62)	74	91	62

that which could be traced to a source (report, attributed). Statements in a third of the articles were interpretations or generalizations (inferences) made by the author about hypertension or sodium in the diet.

In 74% of the articles, words and terms about hypertension and sodium were explained. Examples of undefined terms included: blood pressure, hypertension, sodium, systolic and milligrams. Magazine articles were most likely to explain words and terms to the reader than newspaper articles. Of those articles which used abbreviations, almost all (91%) explained the meanings of the abbreviations, i.e., mg., NIH.

Eighty-one percent of all articles were written without emotional characteristics (Table 20). Emotional statements which motivate through sarcasm, disgust or joy, were categorized in less than 20% of the articles.

Appeal and Readability and the Author

The majority of the articles were written either by professional journalists (60%) or the publication staff (unsigned, 27%) (Table 21). A small percentage of the articles were written by doctors (7%) or nutritionists (4%). The doctors and nutritionists were employed by the publications in several cases, or they wrote articles for publication while employed in their professional setting. The authors who were nutritionists (Jean Mayer, Frederick Stare) frequently contribute articles to newspapers for syndication on a variety of health and nutrition topics.

There was a difference in the means ($p < 0.05$) of appeal characteristics in an article and the author of that article (Table 22). Articles

Table 21. Authors of print media articles on salt and hypertension

Author	(n)	% of Articles
Unsigned	(23)	27
Nutritionist	(3)	4
Doctor	(6)	7
Journalist	(50)	60
Other[a]	(2)	2

[a]James Beard, Michael Jacobson

Table 22. Author and the appeal and readability of print media articles on salt and hypertension

Author	(n)	Characteristics	
		Appeal[a,b]	Readability[c,d]
Unsigned	(23)	3.3 ± 1.8[e]	3.9 ± 1.1
Nutritionist	(3)	5.3 ± 1.2	4.3 ± 1.5
Doctor	(6)	5.7 ± 1.6	4.8 ± 0.7
Journalist	(50)	4.4 ± 1.4	4.3 ± 0.8
Other[f]	(2)	5.5 ± 3.5	3.5 ± 0.7

[a]Combined observations of information, incentive, and intimidation (0-1 = low appeal; 5-8 = high appeal).

[b]Significant difference in mean scores at $p<0.05$.

[c]Combined observation of sentence and paragraph length, title rephrased, meaningful number, incident use, and Fog Index (6 = easy to read; 0-3 = difficult to read).

[d]Significant difference in mean scores to $p=0.09$.

[e]Mean ± standard deviation.

[f]James Beard, Michael Jacobson.

written by doctors had a high appeal (mean = 5.7) compared to unsigned articles (mean = 3.3).

The level of significant difference was approached (p = 0.09) in the means of readability characteristics and the author of the article (Table 22). Articles written by doctors were of average readability (mean = 4.8), while articles written by others (James Beard, Michael Jacobson) had a mean of 3.5. A readability score of 6 was the easiest to read, and a score of 0-3 was difficult to read.

Message Accuracy

Eighty-four articles were used in the analysis of the accuracy of selected nutrition and hypertension statements in the print media articles. Four categories of nutrition/hypertension information statements were reviewed for accuracy. These were nutrition information, causes of hypertension, authorities cited and the treatment of hypertension.

Nutrition Information Statements

Table 23 lists ten nutrition information statements evaluated in the articles. The statements presented accurately most often in the articles included: the occurrence of hypertension in the population (30%), amount of salt in the diet (20%), and food sources of salt and sodium (19%).

These three statements and the role of salt in food processing were also presented inaccurately in a small percentage of the articles (Table 23). An article would erroneously report the number of Americans who suffer from hypertension, the sodium content of foods or the purpose of salt in food processing.

Table 23. Nutrition information statements presented in print media articles on salt and hypertension

Status of Statements in Articles	Nutrition Information Statements Presented % of Articles									
	Sodium a Mineral	Occurrence of Hypertension	Salt is Not Sodium	Function of Salt in Body	Salt is Iodine Carrier	Ratio of Sodium to Salt	Food Source Salt/ Sodium	Amount of Salt in Diet	Salt Info. on Labels	Role in Food Processing
Accurate	12	30	13	8	2	5	19	20	6	4
Inaccurate	2	5	4	2	1	--	5	6	4	6
Not present	80	60	77	82	88	87	68	67	82	82
Not applicable	6	5	6	7	8	8	8	8	8	8
Total[a]	100	100	100	99	99	100	100	101	100	100

[a]Totals may not equal 100% due to rounding.

Explanations about other aspects of salt and sodium were absent in many articles. These included: the role of salt as an iodine carrier (88%), the ratio of sodium to salt (87%), the function of salt in the body (82%), nutrition labels as a source of information about salt (82%), the role of salt in food processing (82%), that sodium is a mineral (80%).

The nutrition information presented accurately in the articles consisted of statements about the occurrence of hypertension in the population and dietary sources of salt and sodium. Information about the physiological and technical functions of salt and sodium were absent frequently in the articles.

Causes of Hypertension

Table 24 lists the percentages of articles that contained nine selected causes of hypertension statements. The influence of high dietary salt intake in the development of hypertension was accurately stated as a cause of hypertension in about a third of the articles. The roles of obesity, genetics, life style, environment, and multiple factors, as influences in the development of hypertension, were reported in a fourth of the articles.

Inaccurate causes of hypertension statements attributed hypertension to meat eating, heavy drinking, cigarette smoking, or a high fat diet (17%). The influence of a high salt diet as a cause of hypertension was inaccurately presented in 12% of the articles. These articles referred to salt as the only cause of hypertension. Race, as a contributing

Table 24. Causes of hypertension reported in print media articles on salt and hypertension

Status of Statements in Articles	Causes of Hypertension Reported % of Articles								
	Multiple Factors	Obesity	Genetics	Race	Environmental	Early Introduction of Salt	Life Style, Stress	High Salt	Other[a]
Accurate	25	29	26	10	21	5	24	31	18
Inaccurate	5	--	2	--	1	8	2	12	17
Not present	60	62	62	81	68	77	64	48	58
Not applicable	11	10	10	10	10	10	10	10	7
Total[b]	101	101	100	101	100	100	100	100	100

[a]Meat eating, cigarette smoking, heavy drinking, high fat diet, use of oral contraceptives.

[b]Totals may not equal 100% due to rounding.

factor in the development of hypertension was not reported in 81% of the articles and was the cause most frequently absent from the articles. Mention of the influence of an early introduction of salt on the development of hypertension was absent in 77% of the articles.

A variety of causes of hypertension was reported in the articles (Table 24). A single cause did not appear frequently in the articles.

Authorities Cited as References

The percentage of articles that cited specific authorities as either references or sources of information is shown in Table 25. Medical authorities were mentioned most frequently (42%). This classification included physicians, schools of medicine, and medical research.

An inaccurate statement about nutrition and hypertension which directly quoted a medical or another information source was rare. Sources of information frequently not cited in the articles included: scientific studies (88%), the Food and Drug Administration (83%), the American Medical Association (82%), U.S. Senate Select Committee on Nutrition (79%), National High Blood Pressure Institute (76%), and the American Heart Association (71%).

Effects and Treatments of Hypertension

The effects of hypertension most frequently mentioned accurately in the articles included: heart problems (45%), stroke (39%), death (33%), and kidney problems (32%) (Table 26).

Table 25. Authorities cited in print media articles on salt and hypertension

Status of Statements in Articles	Authorities Cited % of Articles											
	American Heart Assoc.	American Medical Assoc.	National High Blood Pressure Institute	Other[a] (medical)	Food and Drug Admin.	Senate Committee on Nutrition	Other[b] (governmental)	Other[c]	Dahl Study	Japanese Study	National Institute of Health	Other[d]
Accurate	20	10	13	42	6	12	7	7	1	1	1	39
Inaccurate	--	--	1	8	1	--	1	4	--	--	--	2
Not present	71	82	76	42	83	79	82	80	88	88	88	49
Not applicable	8	8	10	8	10	10	10	10	11	11	11	10
Total[e]	99	100	100	100	100	101	100	101	100	100	100	100

[a]Doctor, schools of medicine, private physician.

[b]Assistant Secretary of Agriculture, U.S.D.A.

[c]Prevention, Salt Institute, Center for Science in the Public Interest.

[d]Doctor's research, schools of medicine, published studies, author of popular book.

[e]Totals may not equal 100% due to rounding.

Table 26. Effects of hypertension reported in print media articles on salt and hypertension

Status of Statements in Articles	Effects of Hypertension Reported % of Articles						
	Death	Stroke	Heart Problem	Kidney Problem	Personal Relations Problems	Altered Self Image	Other[a]
Accurate	33	39	45	32	2	2	17
Not present	57	51	44	57	87	87	73
Not applicable	10	10	11	11	11	11	11
Total[b]	100	100	100	100	100	100	101

[a]Headache, dizziness, fatigue, not insurable, ill health.

[b]Totals may not equal 100% due to rounding.

Almost half (41%) of the articles presented a treatment for hypertension that involved the alteration of dietary salt in some way (Table 27). Inaccurate statements about the use of drugs in the treatment of hypertension were present in 13% of the articles. Other inaccurate statements suggested the use of garlic, zinc, or vitamin D as treatments for hypertension. Statements about a low sodium diet were absent in 73% of the articles.

The articles contained a variety of statements about the causes, effects and treatments for hypertension. Statements absent most often in the articles included: a single frequent source of information about hypertension, race as a causative factor of hypertension, and information about low sodium diets. A personal relation problem or altered self-image was rarely mentioned as an effect of hypertension. The use of potassium as a treatment suggestion was absent in 82% of the articles.

Number of Nutrition/Hypertension Statements in the Articles

The number of nutrition/hypertension statements per article in each of the five statement categories was tabulated (Table 28). About half of the articles did not contain any statements in the nutrition category. This included those articles which were not applicable.

Half of the articles contained one or more accurate nutrition statements. One fourth of the articles contained one or more inaccurate nutrition statements. In both the accurate and inaccurate nutrition statement category, statements about the number of Americans with hypertension or foods that contained salt or sodium occurred most frequently.

Table 27. Treatment suggestions reported for hypertension in print media articles on salt and hypertension

Status of Statements in Articles	Treatment Suggestions Reported % of Articles							
	Drugs	Diet, Weight	Diet, Low Sodium	Diet, Avoid High Salt	Diet, Alter Salt	Diet, Potassium	Combination of Diet Strategies	Other[a]
Accurate	27	25	17	26	41	7	27	24
Inaccurate	13	1	2	1	5	2	5	21
Not present	50	64	73	64	48	82	60	49
Not applicable	10	10	8	8	7	8	8	6
Total[b]	100	100	100	99	101	99	100	100

[a]See doctor, use garlic, zinc, vitamin D, reduce stress, meatless diet, reduce noise, exercise.

[b]Totals may not equal 100% due to rounding.

Table 28. Number of nutrition/hypertension statements in print media articles

Number of Statements Per Article	Statement Type % of Articles								
	Nutrition Information		Causes of Hypertension		Authority Citations		Treatment of Hypertension		Effect of Hypertension
	Accurate	Inaccurate	Accurate	Inaccurate	Accurate	Inaccurate	Accurate	Inaccurate	
None/Not Applicable	50%	77%	40%	69%	23%	88%	26%	71%	44%
1	25	17	23	18	33	7	26	16	11
2-5	20	6	26	13	42	5	43	12	45
More than 5	5	--	11	--	2	--	5	1	--

Eighteen percent of the articles contained at least one inaccurate statement about a cause of hypertension, and 13% contained between two and five inaccurate statements about the causes of hypertension. Salt was most often presented inaccurately as a single cause of hypertension.

There was a 2:1 ratio between the percent of accurate:inaccurate statements of causes of hypertension in the articles. For every two accurate statements there was one inaccurate statement about the causes of hypertension.

More than 40% of the articles contained between two and five accurate citations of authorities about hypertension (42%), the effects of hypertension (45%), and accurate treatments for hypertension (43%) (Table 28).

The number of accurate statements about nutrition, causes of hypertension, authorities cited, and treatments for hypertension in the article increased as the number of accurate and inaccurate statements about nutrition information and the causes of hypertension increased ($p<0.05$) (Table 29). Articles that contained more than five nutrition information and causes of hypertension statements had a mean of ten accurate statements from the four nutrition/hypertension categories (nutrition information, causes of hypertension, authorities cited, and treatments for hypertension). As more information was presented, accuracy in the article increased.

There was no difference ($p<0.05$) between the number of inaccurate nutrition/hypertension statements in an article and the number of accurate nutrition/hypertension statements (Table 30).

Table 29. Accuracy of nutrition/hypertension statements and number of statements from two selected statement categories

Number of Accurate and Inaccurate Nutrition Information and Causes of Hypertension Statements per Article	Articles (n)	Accurate Nutrition/ Hypertension Statements per Article[a]
0 - 1	(27)	2.9 ± 2.1[b]
2 - 5	(28)	5.8 ± 3.6
More than 5	(29)	10.4 ± 4.4

[a]Significant different in mean scores at $p<0.05$.

[b]Mean ± standard deviation.

Table 30. Number of accurate and inaccurate nutrition/hypertension statements per article

Number of Inaccurate Nutrition/Hypertension Statements per Article	Articles (n)	Accurate Nutrition/Hypertension Statements per Article[a]
0 - 1	(57)	7.0 ± 5.2[b,c]
2 - 5	(21)	5.6 ± 3.7
More than 5	(6)	7.0 ± 5.4

[a]Accurate observations - nutrition information, causes of hypertension, authorities cited, treatment of hypertension (n=39).

[b]Mean ± standard deviation.

[c]No significant differences in mean scores at $p<0.05$.

Appeal, Readability, and Source of Articles and Accuracy

As the level of appeal characteristics in an article increased, the number of accurate nutrition/hypertension statements increased ($p < 0.05$) (Table 31). Articles with high appeal (more than five appeal statements) had a mean of 9.5 accurate nutrition/hypertension statements. Articles with low appeal (fewer than two appeal statements) had a mean of 1.3 accurate nutrition/hypertension statements.

Mean scores of accurate nutrition/hypertension statements were no different ($p < 0.05$) in articles at the difficult, easy, or average reading levels (Table 31).

Articles in magazines contained significantly more accurate nutrition/hypertension statements (mean = 7.8 per article) than articles in newspapers (mean = 5.8 per article) ($p < 0.05$) (Table 32).

Tone of Statements, Reason to Alter Diet, and Methods to Treat Hypertension

Table 33 lists the statements used in this study as indicators of a positive, neutral or negative tone in an article. Sixty-three percent of the articles stated that hypertension was controllable, but only 16% provided information about diet modification. Salt was cited as one of several factors important in the development of hypertension in 41% of the articles. Salt was presented positively as a functional component necessary in food processing in a small percentage (2%) of the articles.

Faulty diet (too much salt, sugar, fat) was presented as a factor in the development of hypertension in 42% of the articles. A small percentage of articles (18%) emphasized the symptoms of hypertension.

Table 31. Number of accurate nutrition/hypertension statements related to the message characteristics of appeal and readability

Message Characteristic	Accurate Nutrition/ Hypertension Statements per Article[a]	
Appeal[b]		
Low	1.3 ± 1.3[c]	
Medium	5.9 ± 3.6	$p<0.05$
High	9.5 ± 6.4	
Readability[d]		
Easy	7.2 ± 4.8	
Average	6.8 ± 4.6	$p=0.75$
Difficult	6.1 ± 5.2	

[a]Accurate nutrition information, causes of hypertension, authorities cited, treatment of hypertension statements.

[b]Combined observations of information, incentive, and intimidation.

[c]Mean ± standard deviation.

[d]Combined observations of sentence and paragraph length, title rephrased, incident use, Fog Index.

Table 32. Media source of salt and hypertension articles and accuracy of nutrition/ hypertension statements

Media Source (n)	Accurate Nutrition/ Hypertension Statements per Article[a]	
Magazines (34)	7.8 ± 5.1[b]	p<0.05
Newspapers (50)	5.8 ± 4.4	

[a]Accurate nutrition information, causes of hypertension, authorities cited, treatment of hypertension statements.

[b]Mean ± standard deviation.

Table 33. Tone of nutrition/hypertension statements in print media articles on salt and hypertenion

Status of Statements in Articles	Tone of Nutrition/Hypertension Information % of Articles									
	Positive-Neutral Statements						Negative Statements			
	Information to modify	Resource to Contact	Condition is Control-lable	Condition is Genetic	Salt not only factor	Salt necessary in processed food	Faulty Diet as a Cause	Discomfort	Group Responsible	Symptoms Emphasized
Present	16	12	63	36	41	2	42	27	39	18
Not present	77	82	30	57	51	91	52	67	54	76
Not applicable	7	6	7	7	8	7	6	6	7	6
Total[a]	100	100	100	100	100	100	100	100	100	100

[a]Totals may not equal 100% due to rounding.

Thirty-nine percent of the articles blamed someone or something as responsible for causing hypertension in the American population (Table 33).

Table 34 lists those groups which were presented as responsible for the increased risk of hypertension in the American population. The American diet was cited most frequently (67%) followed by industry (45%), family meals (30%), and foods prepared in restaurants (21%).

Concern for health was the primary reason (62%) given in the articles to alter health habits (Table 35). Saving money by purchasing fewer drugs and enjoying life and friends were also reasons presented in articles for changing habits (11%).

Approximately 36% of the articles contained a statement which directed the reader to do something he would ordinarily not do to treat hypertension (Table 36). Only 13% of the articles provided a source for the reader to contact for more information about hypertension. Approximately 26% of the articles told the reader that a combination of treatment methods, such as diet and exercise, was important in order to control hypertension.

Almost half of the articles (42%) mentioned the importance of relaxation in the management of hypertension (Table 37). In about one fourth (24%) of the articles, the reader was told that the treatment and control of hypertension were his responsibility. About 25% of the articles contained practical advice about reducing sodium or salt in the diet. In 30% of the articles, the reader was told to visit the doctor before the start of any type of treatment program.

Table 34. Group responsible according to the print media for the increased risk of hypertension in the American population

Group Responsible for Increased Risk of Hypertension	% of Articles[a]
Industry	45
Government	6
Family meals	30
American diet	67
Restaurant food	21
Academia	--
Other[b]	45

[a]Percentages total more than 100% due to multiple listings in the same article. n=33 articles.

[b]Water supply, salt on roads, air traffic noise, job stress.

Table 35. Reason to alter habits presented in print media articles on salt and hypertension

Status in Articles	Reason to Alter Habits Presented % of Articles	
	Concern for Health	Other[a]
Present	62	11
Not present	24	74
Not applicable	14	16
Total[b]	100	101

[a]Save money, relaxation, enjoy friends.

[b]Totals may not equal 100% due to rounding.

Table 36. Methods to treat hypertension given in print media articles on salt and hypertension

Status of Statements in Articles	Methods to Treat Hypertension Presented % of Articles						
	Buy Something	See Someone	Prepare Something	Do Something	Avoid Something	Given Source to Contact	Combination of Methods
Present	17[a]	6	16	36	23	13	26
Not present	52	65	57	41	51	63	50
Not applicable	29	29	27	24	26	24	24
Total[b]	98	100	100	101	100	100	100

[a]Told to buy a specific product in 2% of the articles.

[b]Totals may not equal 100% due to rounding.

Table 37. Advice statements in print media articles on salt and hypertension

Status of Statements in Articles	Advice Statements Presented % of Articles							
	Practical Advice	Accurate	Food Guides Accurate	Visit Doctor	Amounts to Exercise	Accurate Measures	Relax	Individual's Responsibility
Present	25	5	2	30	2	6	42	24
Not present	25	1	4	23	4	2	17	48
Not applicable	50	94	94	48	94	92	41	29
Total[a]	100	100	100	101	100	100	100	101

[a]Totals may not equal 100% due to rounding.

Most articles (76%) made some reference to a medical authority when nutrition/hypertension information was presented (Table 38). Academia and government sources were infrequently cited.

Table 39 is a summary of the number of tone, value, method and advice statements in the articles. More than half of the articles contained at least one statement that offered advice about the treatment of hypertension, a method of treatment, and a reason for the individual to control his blood pressure.

Theme of Publication and Accuracy of the Nutrition/Hypertension Statements

Five categories of nutrition/hypertension statements (nutrition information, causes of hypertension, authorities cited, the treatments for hypertension, and the effects of hypertension) were investigated for the presence and accuracy of selected statements (Table 40).

More inaccurate nutrition information statements (mean = 0.9) were present in articles written for the family/health/science publications than for any other publication category ($p < 0.05$).

Articles written for the publications with a general interest readership had the lowest number (mean = 0.9) of accurate causes of hypertension statements per article compared to the family/health/science (mean = 3.0), news (mean = 2.1), and home/garden/woman's service (mean = 1.5) publications ($p < 0.05$).

The lowest mean of effects of hypertension was present in articles in general interest/editorial publications (0.7) and the highest mean of

Table 38. Authority sources mentioned in print media articles on salt and hypertension

Status in Articles	Sources of Authority Mentioned % of Articles			
	Government	Academia	Medical	Other[a]
Present	23	17	76	16
Not present	73	78	20	80
Not applicable	5	5	4	5
Total[b]	101	100	100	101

[a]Health, personality, business.

[b]Totals may not equal 100% due to rounding.

Table 39. Number of tone, value, method, and advice statements in print media articles on salt and hypertension

Number of Statements per Article	Statement Type % of Articles				
	Tone		Value	Method	Advice
	Positive	Negative			
None/not applicable	17	38	33	50	45
1	33	16	61	18	20
2 - 5	50	33	6	32	35
More than 5	--	13	--	--	--
Mean	1.7	2.1	0.7	1.4	1.2
± standard deviation	1.3	2.6	0.6	1.9	1.4

Table 40. Nutrition/hypertension statements and theme of publication of print media articles on salt and hypertension

Theme of Publication[a]	Nutrition/Hypertension Statements								
	Nutrition Information		Cause of Hypertension		Authorities Cited		Treatment of Hypertension		Effect of Hypertension[c]
	Accurate[b]	Inaccurate[c]	Accurate[c]	Inaccurate[b]	Accurate[b]	Inaccurate[b]	Accurate[b]	Inaccurate[b]	
Home/Garden/ Woman's Service	1.6±1.9[d]	0.3±0.5	1.5±2.2	0.5±0.7	1.3±1.6	—	2.0±1.9	0.6±0.9	2.0±2.0
Family/Health/ Science	1.1±1.7	0.9±1.4	3.0±2.7	0.9±0.9	1.9±1.7	0.4±0.8	2.7±1.7	0.9±1.0	2.8±1.8
Current News	1.4±1.9	0.2±0.5	2.1±2.4	0.3±0.8	1.8±1.5	0.2±0.6	1.9±1.8	0.1±0.4	1.7±1.8
General Interest/ Editorial	0.4±1.0	0.1±0.3	0.9±1.5	0.4±0.7	1.3±0.8	0.1±0.2	1.3±1.8	0.7±1.8	0.7±1.4

[a]Publication category "other" deleted for statistical calculations.

[b]No significant differences in mean scores at $p<0.05$.

[c]Significant differences in mean scores at $p<0.05$.

[d]Mean ± standard deviation.

effects (2.8) was in articles written for the family/health/science publication ($p < 0.05$).

Of the thirty-nine nutrition/hypertension statements which were evaluated, the articles written for the general interest/editorial publications contained the fewest accurate statements (mean = 3.9), compared to the family/health/science (mean = 8.8), news (mean = 7.3), and home/garden/woman's service (mean = 6.4) publications (p 0.05) (Table 41).

Articles written for the family/health/science publications had the highest number of inaccurate nutrition/hypertension statements (mean 2.9) compared to articles written for the news publications (mean = 0.9) ($p<0.05$).

There was a statistically significant difference in the mean of both the accurate and inaccurate nutrition/hypertension statements present in an article and the theme of the publication in which the article appeared. Articles written for family/health/science publications had the highest means for both accurate and inaccurate nutrition/hypertension statements compared to the other publication themes. Articles written for the news publications had the lowest number of inaccurate nutrition/hypertension statements (Table 41).

Author and Accuracy of Nutrition/Hypertension Statements

No statistically significant difference was found between the author of the article and the number of accurate or inaccurate nutrition/hypertension statements made in the article (Table 42). Nor was a

Table 41. Theme of publication and accurate and inaccurate nutrition/hypertension statements

Theme of Publication[a]	Nutrition/Hypertension Statements	
	Accurate[b,c]	Inaccurate[c,d]
Home/Garden/Woman's Service	6.4 ± 5.6[e]	1.3 ± 1.7
Family/Health/Science	8.8 ± 5.2	2.9 ± 3.0
Current News	7.3 ± 4.7	0.9 ± 1.8
General Interest/Editorial	3.9 ± 3.2	1.2 ± 2.2

[a]Publication category "other" deleted for statistical calculations.

[b]Accurate observations - nutrition information, causes of hypertension, authorities cited, treatment of hypertension.

[c]Significant difference in mean scores at $p<0.05$.

[d]Inaccurate observations - nutrition information, causes of hypertension, authorities cited, treatment of hypertension.

[e]Mean ± standard deviation.

Table 42. Nutrition/hypertension statements and author of print media articles on salt and hypertension

Author	Nutrition/Hypertension Statements								
	Nutrition Information		Cause of Hypertension		Authorities Cited		Treatment of Hypertension		Effect of Hypertension[a]
	Accurate[a]	Inaccurate[a]	Accurate[a]	Inaccurate[a]	Accurate[a]	Inaccurate[a]	Accurate[a]	Inaccurate[a]	
Unsigned	0.7±1.3[b]	0.1±0.3	1.3±1.7	0.4±0.7	1.7±1.2	--	1.7±1.7	0.6±1.7	1.2±1.7
Nutritionist	2.7±2.9	--	4.7±4.0	--	0.7±0.6	--	3.7±3.2	--	2.0±2.0
Doctor	1.3±1.8	0.3±0.5	1.7±1.4	0.8±0.8	0.7±0.5	--	1.3±1.0	0.8±1.0	3.0±2.4
Journalist	1.3±1.8	0.5±1.0	2.1±2.5	0.5±0.9	1.8±1.6	0.2±0.6	2.1±1.8	0.4±0.8	1.8±1.8
Other	3.0±4.2	0.5±0.7	--	0.5±0.7	0.5±0.7	1.5±2.1	1.5±0.7	1.5±2.1	2.5±3.6

[a]No significant differences in mean scores at $p<0.05$.

[b]Mean ± standard deviation.

statistically significant difference found between the author of the article and the accuracy of the thirty-nine nutrition/hypertension statements evaluated (Table 43).

Articles written by nutritionists and doctors were no different ($p<0.05$) in the number of either accurate or inaccurate nutrition/hypertension statements than articles written by journalists or articles unsigned.

Table 43. Author of article and accurate and inaccurate nutrition/hypertension statements

Author	(n)	Nutrition/Hypertension Statements	
		Accurate[a,b]	Inaccurate[b,c]
Unsigned	(23)	5.2 ± 4.0[d]	1.1 ± 1.9
Nutritionist	(3)	11.7 ± 4.9	---
Doctor	(6)	5.0 ± 4.0	2.0 ± 1.7
Journalist	(50)	7.2 ± 5.1	1.6 ± 2.5
Other	(2)	5.0 ± 5.6	4.0 ± 5.7

[a]Accurate observations - nutrition information, causes of hypertension, authorities cited, treatment of hypertension.

[b]No significant differences in mean scores at $p<0.05$.

[c]Inaccurate observations - nutrition information, causes of hypertension, authorities cited, treatment of hypertension.

[d]Mean ± standard deviation.

DISCUSSION

Background

Nutrition information in the print media has not been previously evaluated systematically. Studies have focused on the evaluation of nutrition information in a variety of print sources. Sims (1977) focused her research on nutrition information in books, Anderson et al. (1980) evaluated printed prenatal nutrition materials, and Leonhard-Spark (1980) investigated food advertisements in women's consumer magazines. Because of the lack of documentation of the nutrition information in the popular print media, this study was done.

Popular print media has focused attention on nutrition as a health factor in recent years. Of particular interest to this investigator was the popular print media presentation of information about salt as a factor in the development and treatment of hypertension in humans.

Hypertension affects more than 24 million Americans (White and Crocco, 1980). The nutrition community has not established a clear relationship between salt intake and the development of hypertension (Food and Nutrition Board, Recommended Dietary Allowances, 1974; Food and Nutrition Board, Recommended Dietary Allowances, 1980). Yet, the government publications Dietary Goals for the United States (U.S. Senate Select Committee on Nutrition and Human Needs, 1977a, 1977b) both

contained recommendations to lower salt intake in an attempt to decrease the incidence of hypertension in Americans.

Americans are concerned about hypertension as a health problem and have changed their dietary patterns because of high blood pressure (Yankelovich et al., 1979).

Articles in the popular print media are one source of information for the public about nutrition and hypertension. In this study an attempt was made to objectively document the coverage, the journalistic techniques and the accuracy of the nutrition information in the popular print media.

Several evaluation forms were reviewed and found inappropriate for use in this study. Guidelines in these forms were general so that a single form could be used to evaluate many nutrition topics in a variety of media. The Dairy Council of Michigan "Guidelines" (1973) were designed to be used with nutrition books. Another evaluation form (Bobbitt, 1980) contained vague directions and subjective evaluation criteria. To meet the objectives of this study, an original, objective evaluation form based on content analysis principles was developed (Appendix C). The form was used to evaluate selected physical and informational characteristics about salt and hypertension in popular print media.

Study Population

One hundred and one articles which met the selection criteria for the topic of salt and hypertension appeared in the popular print media in the years 1975-1978 (Appendices A and B). The evaluation of physical characteristics in the print media was conducted on all 101 articles.

Seventeen of the original 101 articles were not used in the evaluation of the message characteristics and accuracy of information about salt and hypertension because only the headlines contained information about the topic.

Misleading headlines are the most frequent type of error in science articles in newspapers (Tankard, 1976). Headlines of print media articles create expectations in the reader's mind that the information in the article will relate to the topic. These seventeen articles are examples of misleading headlines.

The Journal of the American Dietetic Association was reviewed from 1971-1978 for titles which met the selection criteria. No original articles were found for inclusion in the study. There were brief abstracts of articles from other professional journals (Journal of the American Medical Association, American Journal of Clinical Nutrition, Journal of Pediatrics, New England Journal of Medicine) during this time. This lack of information about salt and hypertension in the professional journal of more than 42,000 dietitians was surprising. Research articles may be placed in other journals with a larger readership, or researchers may assume that readers of the Journal of The American Dietetic Association also read the clinical journals or the editors of the Journal of The American Dietetic Association may have prevented articles on the topic being included.

Advertisements were not used in the study of communication content of the print media because too few advertisements met the title selection criteria. The criteria were designed for selections by titles.

Advertisements for salt or products containing salt often carried the salt message in the copy paragraphs rather than in the headline/title. Strict selection criteria for this study eliminated the inclusion of the salt-oriented advertisements (i.e., Morton Salt).

Content analysis was used to evaluate eighty-four articles for journalistic techniques and accuracy of nutrition information. This was considered an appropriate number of articles for study. A content analysis study of science articles in three major newspapers had recently been done on seventy articles and was adequate to draw conclusions about journalistic techniques and accuracy (Fargo, 1976).

Physical Characteristics

There was a three-fold increase in the number of salt and hypertension articles which appeared in the print media between the two years prior to and the two years following the publication of the Dietary Goals for the United States (U.S. Senate Select Committee on Nutrition and Human Needs, 1977a) (Table 11). This increase in number of articles in the print media in 1977-1978 suggests that coverage of a nutrition/health topic had become newsworthy and merited reporting to the public following the government publication which addressed such topic.

In this study two publications were frequent sources of articles, National Enquirer and Prevention (Table 7). These publications contained articles targeted for the general interest/editorial readers and the family/health/science readers, respectively. Because two publications provided a large number of articles in this study, in some cases, the data tended to group into these two readership categories.

Most of the 101 articles were located in publications written for the general interest/editorial publication (38%), with circulation greater than 1.5 million (52%), with a single issue at a cost of less than $0.60 (65%), and with the average article length less than 100 inches (73%) (Table 11).

The lengths of articles in this study ranged from 7-1190 inches. A single column in a newspaper, including headlines measured approximately 50 inches in this study. Most articles in this study were less than a column in length, provided 6 columns to the page.

In this study the majority of articles was not located in one particular section (Table 11). McCombs and Mauro (1977) found that page location, particularly the front page, and the amount of space occupied by an article were key variables in predicting if the article would be read. Nutrition articles would have greater visibility if they were located in the front pages of the publication. The data from this question, however, indicate that articles about nutrition/hypertension were not placed in a particular section.

Articles in magazines and newspapers were similar in some physical characteristics (Table 8). Most articles appeared in each publication in 1977, in January and November, and in large circulation publications. They differed in cost, with newspapers less expensive than magazines. This is not surprising because magazines are usually more expensive than newspapers. The high number of articles in two particular months in both media requires further research into the media's policy about topic newsworthiness. These months may be favored by print media to feature

nutrition and health articles, nutrition information may be used for fillers during slower news months; or this may have been when the nutrition story occurred.

The days of the week in which articles on salt and hypertension most frequently appeared in newspapers were Sunday (15%) and Tuesday (14%) (Table 11). On these days newspapers usually publish a specific food-related section.

Articles in magazines were most frequently located in publications for family/health/science readers (58%). Articles in newspapers were divided between news (46%) and general interest/editorial (54%) readers (Table 11). The high percentage of general interest publications that contained articles on salt and hypertension can be attributed in part to the larger number (28) of National Enquirer articles used in this study.

Visuals were less likely to accompany newspaper (Table 12) than magazine articles (82% and 44% respectively). Photographs were the most frequent type of visual used by magazine (39%) and newspaper (12%) articles. The subject of the visuals which accompanied the article was most frequently a person in both print media. The lack of visuals could be due to space or financial limitations of the publications, or difficulty in visually portraying a concept of health or nutrition.

The title words used most frequently in the media were "blood pressure" (44%) and "salt" (23%) (Table 13). "Blood pressure" were the title words in twelve articles in the family/health/science category. Nine of the articles which used the words "blood pressure" in this category were from Prevention (Appendix B). "Blood pressure" were the

title words in twenty-one articles in the general interest/editorial category. Twenty articles in this category were from National Enquirer (Appendix A). These two publications may choose to feature a health-related term in the titles of articles to attract the reader's attention.

Further research into the philosophies of the nutrition and health information published in selected popular print media may be valuable to the nutrition professional in the evaluation of these articles.

Message Characteristics

Most articles (75%) contained sentences with an average length of less than 20 words (Table 14). These articles are easy to read according to Hawkins (1967). He states that the number of words per sentence influence the reader and that short sentences (less than 20 words) are easier to write and read.

Eighty-seven percent of the articles had fewer than five sentences per paragraph (Table 14). Articles in newspapers had less than five sentences per paragraph more frequently (98%) than articles in magazines (77%). Generally, newspaper paragraphs are shorter than paragraphs in magazines (Marckwardt and Cassidy, 1967). Paragraph length is variable, depending on the media in which it appears. The rapid and highly factual character of newspaper writing may result in shorter paragraphs, as well as the eye appeal of short paragraphs and frequent breaks in the narrow columns of newsprint.

The use of at least one incident or illustration to describe a situation was a frequent characteristic (91%) (Table 14). Gould (1962) suggests that interpretation or illustration should be used when writing for the layreader. The articles in this study are from the popular print media, which is written for the layreader.

A third (33%) of the articles were above the 12th grade reading level (Table 14), especially in newspapers, based on Fog Index. Articles were evaluated for the Fog Index with a sample of the first 100 words. The lead or first paragraph is often designed to attract the reader's attention and usually summarizes the article (Tankard and Ryan, 1974).

Three fourths of the articles contained between four and five of the characteristics used to determine readability, which is an average reading level (Table 15). The readability of an article became easier as the number of characteristics present increased.

Materials that are at the 10th grade reading level and lower are considered easy reading. Popular magazines are rarely above the 12th grade reading level (Flesch, 1948). Materials higher than 13th grade handicap communication. The larger number of newspapers compared to magazine articles in this study may have contributed to the slightly higher reading level of the articles. Also a factor was the use of the opening sentences in each article as the basis for the calculation of the Fog Index.

Articles written by doctors, nutritionists, and journalists contained more of the readability characteristics than the unsigned articles ($p<0.05$).

Most articles in the popular print media on salt and hypertension were written by journalists (60%) or were unsigned (27%) (Table 21). Doctors and nutritionists wrote only a small percentage of the articles used in this study (11%).

Some of the doctors and nutritionists were regular contributors to print publications (Jean Mayer, Frederick Stare). These authors used the same high number of journalistic techniques (Table 22) as the journalists. This made the information in the articles easy to read.

These data suggest that doctors and nutritionists may write readable articles for the lay consumer because they are practiced in writing for the popular media.

Mayer (1977) suggests that the reader check the author's credentials for nutritional credibility as well as the sources used in the article. This is difficult to do with unsigned articles - which comprised 27% of the articles. This is also difficult for the reader unfamiliar with current nutrition controversy to do.

Over half (63%) of the articles contained statements that repeated the title topic in the opening four paragraphs (Table 17). Statements about current research and theories about nutrition/hypertension could be traced and verified in 44% of the articles. Twenty-seven percent of the articles contained specific statements about salt and hypertension, without the use of conditional clauses or embellishment. These statements were not checked for accuracy, but served only as an indicator to the characteristics used in the popular print media to present the information to the reader.

The results show that almost 60% of the articles contained a mixture of specific and nonspecific statements. An example of a nonspecific statement: "Regarding blood pressure, . . . you may be eating too much sugar, salt, or fat, and not enough garlic, zinc or vitamin C." An example of a specific statement in the same article as the nonspecific: "Americans eat 6 to 8 grams (of salt) a day." It is difficult for the lay reader to distinguish between the helpful and misleading statements about salt and hypertension.

Persuasability of a message according to Marquez (1977) can be delivered in three ways: 1) basic persuasion - the use of specific, relevant, and verifiable facts; 2) incentives - the provision of positive goals for which the individual should strive; and 3) intimidation - statements that make the reader fearful.

The incentive statements used most frequently in the articles reviewed urged the readers that if certain guidelines were followed to reduce salt intake, better health (67%) or longer life (37%) would be possible (Table 17). The reader was intimidated with the fear of death in 32% of the articles. These data suggest that the articles in this study used non-threatening reasons to motivate the reader to desire better health more often than intimidation reasons.

Approximately 44% of the articles were categorized as having high appeal by the presence of more than five of the information, incentive, or intimidation statements (Table 18). The effect of appeal statements in the popular print media to motivate the reader to change nutrition/health habits requires more research.

Articles in the family/health/science publications contained more (mean = 5.4) appeal characteristics than articles written for the general interest/editorial (mean = 3.2) publications ($p < 0.05$) (Table 19). Two publications, Prevention and National Enquirer provided most of the articles in these two categories, respectively. The data suggest that articles in Prevention attempt to be highly persuasive to the reader. Articles in the National Enquirer contained few persuasive statements and did not attempt to persuade the reader to alter nutrition/health habits.

There was a difference ($p < 0.05$) between the use of appeal characteristics in an article and the author (Table 22). Articles written by doctors, nutritionists, and "other" (James Beard, Michael Jacobson) could be considered more persuasive than articles written by the journalists or articles that were unsigned.

The doctors and nutritionists who were authors in this study, were a small percentage of the authors (11%). It is difficult to draw conclusions that these two categories of authors are more persuasive writers than journalists about nutrition and health habits. Further study on the effect of the popular print media to prompt action to change health habits is necessary.

Most articles evaluated explained numbers related to salt and sodium in terms understandable to the reader (Table 20). These are characteristics of clear writing which help reduce the chance of misinterpretation of the information by the reader. Other sources of possible confusion or misinterpretation of printed information by the lay reader

include: use of jargon, personal opinion, advice, statements which play on the ignorance or fears of the public, ambiguity and over-simplification of the facts by the author (McNutt and McNutt, 1978; Olson et al., 1979; Rosenberg, 1956).

The majority of the sentences (41%) in the articles evaluated were statements which reported an event, used quotations from an individual, or cited a specific source (Table 20). Newspaper articles exhibited this characteristic almost twice as often as magazines.

A sentence which reports an event or occurrence and attributes it to someone or something is the most objective type (Sims, 1977). This type of sentence is characteristic of newspaper articles in general. Many of the articles in the newspapers in this study were reports of recent events and contained quoted material.

Message Accuracy

The occurrence of hypertension in the American population and the food sources of salt and sodium were the most frequent accurate and inaccurate nutrition information statements in the articles (Table 23). Most frequently absent of the ten evaluated nutrition information statements were those which mentioned salt, sodium, and their functions in the body. These data suggest that factual information such as the number of individuals with high blood pressure, or the number of grams of sodium in a certain food can be accurately transferred from the nutrition professional to the journalist to the reader. Concepts dealing with nutrition and health require translation to be understandable by the consumer. The

translation process of concepts or complex scientific principles to the lay language is difficult. Further investigation is needed to evaluate the translation process of nutrition information into the popular print media.

A high salt diet, obesity, genetics, and multiple factors were most frequently given accurately as causes of hypertension. The role of a high salt diet was inaccurate most frequently as a cause of hypertension.

The presence of both accurate and inaccurate statements about the role of salt in the development of hypertension in an article suggests one source of the consumer's present confusion and misunderstandings about hypertension. Discrepant facts in the media could be a source of the consumer confusion about salt and hypertension.

The authorities cited most frequently in the articles for information about salt and hypertension were the American Heart Association (20%), and the National High Blood Pressure Institute (13%). The "other" category was mentioned in 42% of the articles as sources of information. This group included individuals who were the features of the articles. Scientific studies were listed in 1% of the articles as authority sources of information (Table 25).

The rather infrequent use of the American Heart Association and the National High Blood Pressure Institute as information sources was surprising. The consumer was presented with information from a variety of sources, with no single source repeatedly presented in the media.

Forty-one percent of the articles suggested that the dietary salt intake should be altered as a treatment for hypertension (Table 27).

Approximately 36% of the articles told the readers to do something to treat hypertension (Table 36). The advice that was most frequently given was to relax (42%) and to visit the doctor (30%) (Table 37). The reader was told that it was the individual's responsibility to obtain and maintain any hypertension treatment in 24% of the articles.

Results in this study indicate that the print media articles contained recognized treatments for hypertension. The reader in most cases was informed that there are several methods to treat high blood pressure, including going to the doctor. In the book, The Health Robbers (Barrett and Knight, 1976), one tip listed to use to spot a medical quack is the promise of a quick, dramatic, or miraculous cure of an illness or condition. The results of this study indicate that quick cures for hypertension are infrequently suggested in the popular print media.

The use of drugs was inaccurately suggested as a treatment of hypertension in 13% of the articles (Table 27). A large percentage (21%) of unorthodox treatments was also presented in the articles. These treatments included the use of garlic, zinc, and vitamin C to treat or "cure" hypertension.

The naive reader may not be able to differentiate between fact and fraud in the treatment suggestions. This could have harmful results for the individual. Harper (1979) stated that many people want to believe in simple solutions for health problems. The nutritionist then has a difficult task in correcting the inaccurate nutrition information upon which the individual has established his beliefs.

Most articles (36%) in this study told the reader to do something as a treatment for hypertension (Table 36), but not how to do it (Table 37). The reader was told to alter the diet, because of concern for health (Table 35), but was given little information about how to do this, i.e., a low sodium diet with a list of low sodium foods. A consumer could attempt to alter his diet without knowing how and could possibly suffer physiological consequences.

There was a 1:2 ratio between the number of accurate and inaccurate statements about nutrition information and causes of hypertension and the number of accurate nutrition/hypertension statements. As the number of statements increased in an article about nutrition or hypertension, the likelihood that at least one of the information statements was accurate also increased ($p < 0.05$). The reader, however, may be unable to differentiate between the accurate and inaccurate statements. There was no difference ($p < 0.05$) between a low number of inaccurate nutrition/hypertension statements and the number of accurate statements.

As the number of appeal statements in an article increased (high appeal), the number of accurate nutrition/hypertension statements (mean = 9.5) also increased ($p < 0.05$). The articles with a low number of appeal characteristics had a low number (mean = 1.3) of nutrition/hypertension statements.

The space allowed in a print media publication may be a factor in the length of the article and the number of statements used by the author. An article may be brief due to limited space, editorial decision, or insufficient information about the topic.

Positive information about the control of hypertension and the complex etiology of the disease was present in many articles (Table 33). Bedworth and Bedworth (1978) noted that fear or other forms of mental punishment deter the appearance of some forms of undesirable health behaviors in some individuals, some of the time. Positive (reward) reinforcement of desirable behavior, however, creates a more powerful and long-lasting change in health habits.

Negative statements that attributed the development of hypertension to an improper diet (too much salt, sugar, fat) were present in 42% of the articles (Table 33). Bedworth and Bedworth (1978) and McGuire (1978) noted that negative statements tend to increase stress and anxiety in some individuals, which decreases the chance for learning.

The medical community was the most frequent reference (76%) of information used in the articles (Table 38). This suggests that the medical professionals are a source of information about health topics for the popular press.

Articles written for the general interest/editorial publications had the lowest number of accurate causes of hypertension statements (mean = 0.9), effects of hypertension (mean = 0.7), and inaccurate nutrition statements (mean = 0.1) ($p < 0.05$). This finding reflects the source of the articles in this publication category, the National Enquirer. Articles in the National Enquirer are usually short, with a limited number of nutrition/ hypertension statements.

A difference ($p < 0.05$) was found between the publication category of an article and the mean number of accurate and inaccurate nutrition/

hypertension statements in the article (Table 41). Articles written for news publications contained the fewest number of inaccurate (mean = 0.9) statements compared to family/health/science publications (mean = 2.9).

Articles in the family/health/science and news publications contained the highest number (mean = 8.8 and 7.3, respectively) of accurate statements compared to articles in general interest/editorial publications (mean = 3.9). These data suggest that articles in these publication categories were written with greater accuracy and amounts of information. This could be due to more information resources, such as data banks, medical or nutrition consultants, or professional contacts, available to the author.

The accuracy of the nutrition/hypertension information in articles written by nutritionists was no different ($p < 0.05$) than the accuracy of the nutrition/hypertension information written by non-nutritionists.

Magazines contained more accurate nutrition/hypertension statements per article than newspapers (mean = 7.8 and 5.8, respectively) ($p < 0.05$) (Table 32). This could be attributed to the longer lead times until publication and the greater resources available to magazine authors compared to newspaper authors.

SUMMARY

One hundred and one recent (1975-1978) popular print media articles on salt and hypertension were evaluated for accuracy of nutrition information, physical characteristics and journalistic style. A 135 question evaluation protocol was developed to objectively investigate the content of the articles.

Three times as many articles on salt and hypertension appeared in the popular print media in 1977-78 as appeared in 1975-76. Forty-one of the articles on salt and hypertension in this study were from two publications, National Enquirer and Prevention.

A small number of articles were authored by nutritionists in this study. These nutritionists were frequent contributors to the popular print media on a variety of nutrition/health topics (Jean Mayer, Frederick Stare). The greater number of the evaluated message delivery characteristics in their articles compared to the articles written by journalists demonstrated their familiarity with writing for the consumer on nutrition and health topics. There was, however, no difference in the accuracy of the articles written by nutritionists and articles written by journalists.

The statements which were accurate most often in the articles contained information about salt and hypertension accepted by the scientific

community. These included statements about the occurrence of hypertension in the population, amounts of salt or sodium in certain foods, multiple causes of hypertension, and that some drugs can be useful in the treatment of hypertension.

The statements which were inaccurate most often in the articles contained information about salt and hypertension which is still debated by the scientific community. These statements included the influence of a high salt diet in the development of hypertension and the recommended daily sodium intake.

Popular print media articles told the reader that a change in diet could be beneficial as a treatment for hypertension. Information about how to change the diet was not provided. Instead, the reader was directed to visit the doctor and contact a variety of information sources.

Some articles contained both accurate and inaccurate nutrition/hypertension statements. As the number of nutrition/hypertension statements in the article increased, the likelihood that at least one of the statements was accurate also increased. The lay reader might be unable to differentiate between the accurate and inaccurate statements.

IMPLICATIONS FOR NUTRITIONISTS

Nutritionists should find ways to work with the popular media editors to increase the use of the mass media as disseminators of health information. Nutritionists can provide information to journalists about current areas of dietary controversy, provide nutrition guidelines, and correct misstatements or misunderstandings of information in these publications.

Leonhard-Spark (1980) recommended that nutrition writers and editors be accredited through the American Dietetic Association, National Nutrition Consortium, or other groups qualified to evaluate the knowledge of these individuals.

No single source or article was found based on the evaluation form developed for this study that provided a perfect example of nutrition information in the popular press. Some articles contained accurate and inaccurate statements about the dietary treatments for hypertension. To help nutritionists, journalists, and consumers recognize the variety of nutrition articles available, a portfolio of popular print media articles should be collected and used as examples of accurate, inaccurate, and misleading statements.

A set of guidelines to critically analyze published nutrition information is still needed. This study evaluated a single nutrition and health topic in selected popular print media. Specific questions which related to salt and hypertension were investigated. Other nutrition and health topics should be investigated based on this study's format, but with specific questions developed for the topic. Comparison of the content characteristics of several nutrition/health topics could provide a workable set of guidelines to follow to evaluate nutrition information in the popular press.

Both the popular and professional media should be among those publications analyzed. For this study, only one professional journal was investigated, Journal of The American Dietetic Association. This Journal did not have any articles which met the topic selection criteria. Another nutrition topic should be pursued which includes articles in this publication.

Present educational programs in journalism should be evaluated as possible areas where guidelines for writing and translating scientific and health information for the consumer might be developed.

APPENDICES

APPENDIX A

NEWSPAPER ARTICLES USED IN ANALYSIS OF PRINT MEDIA TREATMENT OF SALT AND HYPERTENSION TOPICS, 1975 TO 1978

APPENDIX A

NEWSPAPER ARTICLES USED IN ANALYSIS OF PRINT MEDIA TREATMENT OF SALT AND HYPERTENSION TOPICS, 1975 TO 1978

Chicago Tribune 1978. October 3, Sec. 3, p. 8. Research proves obesity, high blood pressure linked.

Chicago Tribune 1978. July 19, Sec. 1, p. 2. Studies reveal big shift in U. S. eating.

Chicago Tribune 1978. January 10, Sec. 1, p. 5. Senate's diet report blasted at farm meeting.

Chicago Tribune 1977. November 24, Sec. 8, p. 1. Salt - should we shake the habit?

Chicago Tribune 1976. May 25, Sec. 3, p. 11. High blood pressure is 'most neglected' ill.

Chicago Tribune 1976. May 11, Sec. 1, p. 12. Report salt substitutes can pose health hazard.

Los Angeles Times 1978. July 11, Sec. 4, p. 3. FDA asked for salt labeling on food.

Los Angeles Times 1978. March 9, Sec. 6, p. 1. Government's plan to direct your diet.

Los Angeles Times 1978. January 24, Sec. 1, p. 6. Nutrition panel urges cut in intake of sugars, eggs, salt.

Los Angeles Times 1978. January 18, Sec. 2, p. 1. Sugar linked to high blood pressure.

Los Angeles Times[a] 1978. January 10, Sec. 1, p. 8. Nutritionist hits 'gaps, errors' in Senate list of dietary goals.

Los Angeles Times 1977. October 9, Sec. 6, p. 19. Shakedown on salt suggested.

Los Angeles Times 1977. October 9, Sec. 4, p. 9. Controversy centers on spice of life.

Los Angeles Times 1976. December 27, Sec. 2, p. 7. Our bodies are in rebellion against out diets.

[a]Used only for Evaluation Form of Print Media Articles on Salt and Hypertension, Part I analysis

[b]Duplicate article, used only once

National Enquirer 1978. December 19, p. 5. Church goers have lower blood pressure.

National Enquirer 1978. November 21, p. 37. Cut risk of heart disease in half.

National Enquirer 1978. November 14, p. 3. Diet can cure most victims of high blood pressure.

National Enquirer 1978. October 24, p. 3. Simple exercise can reduce high blood pressure.

National Enquirer[a] 1978. May 16, p. 14. New stick-on-pill for high blood pressure has no bad side effects.

National Enquirer 1978. April 4, p. 3. How they treat Vice-President Mondale's high blood pressure.

National Enquirer 1978. March 7, p. 24. Relaxing can lower high blood pressure.

National Enquirer 1978. February 14, p. 39. High blood pressure linked to three or more drinks a day.

National Enquirer 1977. December 20, p. 41. Fewer nudists have high blood pressure.

National Enquirer[a] 1977. November 1, p. 3. New hope for victims of high blood pressure.

National Enquirer 1977. November 1, p. 46. Incredible psychic can lower her blood pressure to zero.

National Enquirer 1977. July 26, p. 24. Simple quiz about high blood pressure.

National Enquirer 1977. April 26, p. 38. The risk of heart attack or stroke for men 30 to 62.

National Enquirer 1977. April 19, p. 34. Former head of FDA charges doctors major reason that millions with high blood pressure are not being treated.

National Enquirer 1977. March 1, p. 47. Better educated people are less likely to suffer from high blood pressure.

National Enquirer[a] 1977. February 8, p. 3. Six leading causes of death include high calorie diet - experts say.

National Enquirer 1977. January 4, p. 60. Average blood pressure of Americans aged 7 to 74.

National Enquirer 1976. November 9, p.4. Blood pressure readings of millions of Americans are inaccurate.

National Enquirer[a] 1976. July 6, p. 18. Exercise cuts male heart patients' death rate in half.

National Enquirer 1976. May 25, p. 60. What you should eat and what foods you should avoid if you have high blood pressure.

National Enquirer 1975. July 8, p. 13. Amazing new diet that improves your health and cuts your food bill in half.

National Enquirer 1975. June 6, p. 13. High blood pressure and obesity are inherited.

National Enquirer[a] 1975. April 22, p. 29. Several drugs to beat high blood pressure are breast cancer risk for women over 50.

National Enquirer[a] 1975. February 25, p. 20. Drug used for high blood pressure can help the mentally ill.

National Enquirer[a] 1975. February 25, p. 38. Better eating habits are improving Americans' health.

National Enquirer[a] 1975. February 18, p. 44. 20% of people under 60 have genes that can lead to premature heart disease.

National Enquirer[a] 1975. February 11, p. 3. Two out of three people face heart attacks - but most don't care.

National Enquirer 1975. February 11, p. 18. How to tell if you're too tense and what you can do about it.

The New Orleans Times-Picayune[b] 1978. July 16, Sec. 1, p. 17. Salt in food branded as hazardous.

The New Orleans Times-Picayune 1977. December 18, Sec. 1, p. 24. Blood pressure deaths decrease.

The New Orleans Times-Picayune 1977. December 11, Sec. 7, p. 10. Salt has fascinating story, flavored with controversy.

The New Orleans Times-Picayune 1977. March 27, Sec. 1, p. 27. Hypertension: don't drop out.

The New Orleans Times-Picayune 1977. November 12, Sec. 4, p. 11. Few high blood pressure cases are under control.

The New Orleans Times-Picayune 1977. March 13, Sec. 7, p. 2. Apathetic go untreated.

The New Orleans Times-Picayune 1977. February 6, Sec. 8, p. 8. Go easy with salt.

The New Orleans Times-Picayune 1977. January 31, Sec. 4, p. 14. Getting hypertensive patient to stick to medicine a problem.

The New Orleans Times-Picayune 1976. June 10, Sec. 3, p. 4. Salt in food called culprit in hypertension by doctor.

The New Orleans Times-Picayune[a,b] 1975. December 21, Sec. 1, p. 38. McGovern says U.S. "blind" about nutrition.

The New Orleans Times-Picayune 1975. April 26, Sec. 4, p. 4. Foods cause ailments in U.S.

The New York Times 1978. November 28, Sec. 3, p. 1. High blood pressure.

The New York Times 1978. July 18, Sec. 1, p. 14. Salt in drinking water linked to blood pressure.

The New York Times 1978. January 18, Sec. 1, p. 22. High blood pressure linked to body's size.

The New York Times 1978. January 8, Sec. 1, p. 15. Diet linked to drop in blood pressure.

The New York Times 1977. December 14, Sec. 3, p. 12. Personal Health.

The New York Times 1976. November 31, Sec. 4, p. 11. High blood pressure is common.

The New York Times 1976. June 23, Sec. 1, p. 22. Salt substitutes? Ask your doctor.

The Washington Post[b] 1978. February 9, Sec. 5, p. 16. New dietary goals - rechewing the fat.

The Washington Post 1978. January 18, Sec. 1, p. 6. Sugar-salt diet linked to high blood pressure.

The Washington Post 1977. March 27, Parade, p. 12. Does your child have hypertension?

The Washington Post 1977. February 3, Sec. 7, p. 6. Keeping down the pressure.

The Washington Post 1977 January 20, Sec. 6, p. 1. Recommending drastic diet changes.

The Washington Post 1976 June 10, Sec. 7, p. 15. But is it worth its salt?

The Washington Post[b] 1975 November 22, Sec. 1, p. 6. Diet, exercise found to cut heart disease.

APPENDIX B

MAGAZINE ARTICLES USED IN ANALYSIS OF PRINT MEDIA TREATMENT OF SALT AND HYPERTENSION TOPICS, 1975 TO 1978

APPENDIX B

MAGAZINE ARTICLES USED IN ANALYSIS OF PRINT MEDIA TREATMENT OF SALT AND HYPERTENSION TOPICS, 1975 TO 1978

Better Homes and Garden 1977. April, p. 182. Low-sodium recipes.

Bio Science[a] 1978. March, p. 192. The changing United States diet.

Consumer Reports 1977. January, p. 4. A substitute for salt not to everyone's taste.

Family Health 1978. November, p. 39. Dietary goals for the United States.

Farm Journal 1977. April, p. 37. High blood pressure - a heart disease you can control.

House and Garden 1977. July, p. 101. Eating for health: new dietary goals.

House and Garden 1977. February, p. 117. Spice is right.

Ladies Home Journal 1977. May, p. 138. Salt of the earth.

Mademoiselle 1976. May, p. 64. High blood pressure.

National Geographic 1977. September, p. 380. Salt.

Newsweek - 1976. February, p. 66. Kids and high blood pressure.

Organic Gardening 1978. November, p. 144. Shaking the salt habit.

Organic Gardening 1977. June, p. 52. The salt of the earth.

Parents 1976. November, p. 64. Scientific advances can save hi-risk child from threat of serious illness in later life.

Prevention 1978. November, p. 111. Potassium - a natural high blood pressure preventative.

Prevention 1978. August, p. 154. Life can be sweeter and longer without sugar: high blood pressure.

Prevention 1978. June, p. 43. How to develop high blood pressure.

Prevention 1978. June, p. 131. Is natural food nature's heart medicine?

[a]Used only for Evaluation Form of Print Media Articles on Salt and Hypertension, Part I analysis

Prevention 1978. May, p. 150. Do you have a minute to lower your blood pressure?

Prevention 1978. January, p. 70. A case of diabetes and high blood pressure.

Prevention 1978. January, p. 111. Good taste without salt.

Prevention 1977. October, p. 109. Noise, sleep and your blood pressure.

Prevention 1977. August, p. 91. Lower your blood pressure with better diet.

Prevention 1977. May, p. 25. Salt and your inner historical program?

Prevention 1976. August, p. 127. Dizzy? Say good-bye to salt.

Prevention 1975. August, p. 111. How the prevention system of eating protects against high blood pressure.

Prevention 1975. January, p. 81. How's your blood pressure doing?

Reader's Digest[a] 1978. March, p. 141. The great American food debate.

Science 1976. November 19, p. 821. Hypertension: a complex disease with complex causes.

Science Digest 1978. October, p. 38. Take this with 4 grains of salt.

Science News 1978. January 21, p. 39. Hypertension and weight control.

Science News 1977. May 28, p. 347. Lowering blood pressure.

Vogue 1977. October, p. 80. Season food the smart way - it could lengthen your life.

Vogue 1977. August, p. 168. Six goals for healthy eating.

Vogue 1977. March, p. 147. Fix high blood pressure before it fixes you.

Woman's Day 1977. March 8, p. 64. Coping with a killer: hypertension.

APPENDIX C

EVALUATION FORM OF PRINT MEDIA ARTICLES ON SALT AND HYPERTENSION

APPENDIX C

EVALUATION FORM OF PRINT MEDIA ARTICLES ON SALT AND HYPERTENSION

Part I - Physical Characteristics of Publication

Topic	Question Number	Answer Option
Source		
Newspapers	1.	Newspaper: 0 = Not newspaper 1 = Chicago Tribune 2 = Los Angeles Times 3 = The Washington Post 4 = The New York Times 5 = The New Orleans Times-Picayune 6 = National Enquirer
Magazines	2,3.	Magazines: 00 = Not magazine 01 = Better Homes and Garden 02 = BioScience 03 = Consumer Reports 04 = Family Health 05 = Farm Journal 06 = House and Garden 07 = Ladies' Home Journal 08 = Mademoiselle 09 = National Geographic 10 = Newsweek 11 = Organic Gardening 12 = Parents 13 = Prevention 14 = Reader's Digest 15 = Science 16 = Science Digest 17 = Science News 18 = Vogue 19 = Woman's Day
Month	4,5.	01 = January 02 = February 03 = March 04 = April 05 = May 06 = June 07 = July 08 = August 09 = September 10 = October 11 = November 12 = December
Date	6,7.	01 - 31 for days

Topic	Question Number	Answer Option
Year	8.	5 = 1975 6 = 1976 7 = 1977 8 = 1978
Source	9.	0 = Magazine 1 = Newspaper
Circulation	10.	0 = < 500,000 1 = 500,001 - 1,000,000 2 = 1,000,001 - 1,500,000 3 = > 1,500,001
Availability	11.	0 = subscription 1 = direct purchase 2 = both
Cost	12.	0 = $0.60 or less 1 = $0.61 - 1.00 2 = $1.01 - 2.00 3 = $2.01 or more
Frequency	13.	0 = daily 1 = weekly 2 = bi-weekly 3 = monthly (or every 3 weeks) 4 = bi-monthly
Theme of Publication	14.	0 = Home/garden/woman's service 1 = Family/health/science 2 = Current news 3 = General interest/editorial 4 = Other
Article length	15.	0 = < 100 inches 1 = 100 - 200 inches 2 = > 200 inches

Topic	Question Number	Answer Option
Visuals used	16.	0 = none 1 = combination of 2, 3, 4 2 = photograph 3 = drawing 4 = table/graph
Visuals, subject	17.	0 = person 1 = food 2 = place 3 = combination of 0,1,2 4 = other 5 = not applicable
Day of week	18.	0 = Sunday 1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday 7 = Not applicable
Page	19.	0 = front third 1 = 2nd third 2 = last third
Article type	20.	0 = feature 1 = editorial 2 = news 3 = recipe 4 = health 5 = science 6 = other
Title word (or 1st sentence)	21.	0 = salt 1 = sodium 2 = hypertension 3 = blood pressure 4 = dietary eating pattern/habits/ dietary goals 5 = diet 6 = heart disease

PART II - How it is Said

Topic	Question Number	Answer Option
Characteristics		
Short sentences	22.	0 = not applicable 1 = yes 2 = no
Short paragraphs	23.	0 = not applicable 1 = yes 2 = no
Title rephrased	24.	0 = not applicable 1 = yes 2 = no
Illustrations		
Meaningful numbers	25.	0 = not applicable 1 = yes 2 = no
Incident	26.	0 = not applicable 1 = yes 2 = no
Fog Index	27.	0 = > 6 - 7 grade 1 = > 7 - 9 grade 2 = > 9 - 11 grade 3 = > 11 - 12 grade 4 = > 12 grade
Appeal Factors - **Information**		
Specific	28.	0 = not applicable 1 = yes 2 = no 3 = both present
Relevant	29.	0 = not applicable 1 = yes 2 = no 3 = both present

Topic	Question Number	Answer Option
Verifiable	30.	0 = not applicable 1 = yes 2 = no 3 = both present
Incentives		
Better health	31.	0 = not applicable 1 = yes 2 = no
Longer life	32.	0 = not applicable 1 = yes 2 = no
Other	33.	0 = not applicable 1 = yes 2 = no
Intimidation		
Physical	34.	0 = not applicable 1 = yes 2 = no
Other	35.	0 = not applicable 1 = yes 2 = no
Form of Statement		
Most frequent	36.	0 = report attributed 1 = report unattributed 2 = inference 3 = unattributed 4 = imperative
Intensity	37.	0 = not applicable 1 = yes 2 = no
Jargon		
Abbreviations w/ explanation	38.	0 = not applicable 1 = yes 2 = no

Topic	Question Number	Answer Option
In context	39.	0 = not applicable 1 = yes 2 = no
Terms	40.	0 = not applicable 1 = yes 2 = no

Part III - What is Said

Topic	Question Number	Answer Option
Nutrition Information		
Sodium	41.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Hypertension	42.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Salt is not the same as sodium	43.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Function in body	44.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Iodine carrier	45.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Sodium:salt ratio	46.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Food sources	47.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Amounts	48.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present

Topic	Question Number	Answer Option
Labels as information source	49.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Function in food processing	50.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
<u>Hypertension Causes</u> Multiple factors	51.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Obesity	52.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Genetics	53.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Race	54.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Environmental factors	55.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Early introduction of salt	56.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Life style/stress	57.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present

Topic	Question Number	Answer Option
High salt intake	58.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Other	59.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
<u>Authorities</u>		
<u>Medical</u>		
American Heart Association	60.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
American Medical Association	61.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
National High Blood Pressure Institute	62.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Other (Medical)	63.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
<u>Government</u>		
Food and Drug Administration	64.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Senate Select Committee on Nutrition	65.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present

Topic	Question Number	Answer Option
Other (Government)	66.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Other	67.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Studies		
Dahl	68.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Japanese	69.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
National Institutes of Health	70.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Other	71.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Effects of Hypertension		
Death	72.	Present 0 = not applicable 1 = yes 2 = no
Stroke	73.	Present 0 = not applicable 1 = yes 2 = no
Heart problem	74.	Present 0 = not applicable 1 = yes 2 = no

Topic	Question Number	Answer Option
Kidney problem	75.	Present 0 = not applicable 1 = yes 2 = no
Personal relation problem	76.	Present 0 = not applicable 1 = yes 2 = no
Altered self-image	77.	Present 0 = not applicable 1 = yes 2 = no
Other	78.	Present 0 = not applicable 1 = yes 2 = no
Card Number	79.	1
	80.	Blank

Topic	Question Number	Answer Option
Source Newspapers		
	81.	Newspaper: 0 = Not newspaper 1 = Chicago Tribune 2 = Los Angeles Times 3 = The Washington Post 4 = The New York Times 5 = The New Orleans Times-Picayune 6 = National Enquirer
Magazines	82,83.	Magazines: 00 = Not magazine 01 = Better Homes and Garden 02 = BioScience 03 = Consumer Reports 04 = Family Health 05 = Farm Journal 06 = House and Garden 07 = Ladies' Home Journal 08 = Mademoiselle 09 = National Geographic 10 = Newsweek 11 = Organic Gardening 12 = Parents 13 = Prevention 14 = Reader's Digest 15 = Science 16 = Science Digest 17 = Science News 18 = Vogue 19 = Woman's Day
Month	84,85.	01 = January 02 = February 03 = March 04 = April 05 = May 06 = June 07 = July 08 = August 09 = September 10 = October 11 = November 12 = December
Date	86,87.	01 - 31 for days
Year	88.	5 = 1975 6 = 1976 7 = 1977 8 = 1978

Topic	Question Number	Answer Option
Treatment/Prevention		
Drugs mentioned	89.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Diet-Related Treatment		
Diet - weight	90.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Diet - low sodium	91	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Diet - avoid high salt	92.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Diet - alter salt	93.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Diet - potassium	94.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Combination	95.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present
Other	96.	0 = not applicable 1 = present & accurate 2 = present & inaccurate 3 = not present

Topic	Question Number	Answer Option
Positive/Neutral Tone		
Information	97.	Present 0 = not applicable 1 = yes 2 = no
Resource	98.	Present 0 = not applicable 1 = yes 2 = no
Controllable	99.	Present 0 = not applicable 1 = yes 2 = no
Genetic	100.	Present 0 = not applicable 1 = yes 2 = no
Salt - one cause	101.	Present 0 = not applicable 1 = yes 2 = no
Salt - in processing	102.	Present 0 = not applicable 1 = yes 2 = no
Negative Tone		
Faulty diet	103.	Present 0 = not applicable 1 = yes 2 = no
Discomfort	104.	Present 0 = not applicable 1 = yes 2 = no
Blame	105.	Present 0 = not applicable 1 = yes 2 = no
Industry	106.	0 = not applicable 1 = yes 2 = no

Topic	Question Number	Answer Option
Government	107.	0 = not applicable 1 = yes 2 = no
Family diet	108.	0 = not applicable 1 = yes 2 = no
American diet	109.	0 = not applicable 1 = yes 2 = no
Restaurants	110.	0 = not applicable 1 = yes 2 = no
Academia	111.	0 = not applicable 1 = yes 2 = no
Other	112.	0 = not applicable 1 = yes 2 = no
Symptoms emphasized	113.	0 = not applicable 1 = yes 2 = no
<u>Value</u>		
Concern for health	114.	0 = not applicable 1 = yes 2 = no
Other	115.	0 = not applicable 1 = yes 2 = no
<u>Methods</u>		
Buy	116.	0 = not applicable 1 = yes - generic 2 = yes - proprietary 3 = no

Topic	Question Number	Answer Option
See	117.	0 = not applicable 1 = yes 2 = no
Prepare	118.	0 = not applicable 1 = yes 2 = no
Do	119.	0 = not applicable 1 = yes 2 = no
Avoid	120.	0 = not applicable 1 = yes 2 = no
Source	121.	0 = not applicable 1 = yes 2 = no
Combination	122.	0 = not applicable 1 = yes 2 = no
Advice		
Practicable	123.	0 = not applicable 1 = yes 2 = no
Accurate	124.	0 = not applicable 1 = yes 2 = no
Food guides/accurate	125.	0 = not applicable 1 = yes 2 = no
Doctor	126.	0 = not applicable 1 = yes 2 = no

Topic	Question Number	Answer Option
Exercise	127.	0 = not applicable 1 = yes 2 = no
Measures	128.	0 = not applicable 1 = yes 2 = no
Relax	129.	0 = not applicable 1 = yes 2 = no
Individual Responsibility	130.	0 = not applicable 1 = yes 2 = no
Authority		
Government	131.	0 = not applicable 1 = yes 2 = no
Academia	132.	0 = not applicable 1 = yes 2 = no
Medical	133.	0 = not applicable 1 = yes 2 = no
Other	134.	0 = not applicable 1 = yes 2 = no
Author	135.	0 = Unsigned 1 = Nutritionist 2 = Doctor 3 = Journalist 4 = Other

APPENDIX D

INSTRUCTIONS FOR USING THE EVALUATION FORM

APPENDIX D

INSTRUCTIONS FOR USING THE EVALUATION FORM

Materials

Appendix C - Evaluation Form of Print Media Articles on Salt and Hypertension
Appendix D - Instructions for Using the Evaluation Form
Appendix E - Circulation/Cost per Issue of Newspapers Used in This Study
Appendix F - Circulation of Magazines Used in This Study
Appendix L - Outline of Selected Salt and Hypertension Facts and References Used in This Study
Table 8 - Number of random sample paragraph selections necessary to calculate average sentences per paragraph in magazine and newspaper articles
Table 9 - Number of random sample sentence selections necessary to calculate average words per sentence in magazine and newspaper articles
Articles listed in Appendices A and B
Ruler, 12" plastic
Optical scanning sheets (NCS Trans-Optic E. F5709-54321)
Standard pencil
Calculator with basic functions, optional

Procedure

1. Use the Instructions for Using the Evaluation Form (Appendix D) simultaneously with the Evaluation Form (Appendix C). Each topic and question number in the Instructions corresponds with the topic and question on the Evaluation Form and element number on the optical scanning sheet. The Instructions give a complete set of questions and, in some cases, a brief description of what to look for in the article.

2. Record one answer per question on the mark-sensitive sheet for each of the 135 questions. Lines 1-8 and 81-88 are identification questions.

Option: If mark-sensitive sheets are unavailable, record the answer options on regular lined and numbered (to 135) paper for later data entry. If 80 column records are used to record the data, 2 records are needed to contain the 135 elements. Questions 81-88 are repeated identification questions - and only show association of record 1 and record 2.

Part I - Physical Characteristics of Publication

Source

1-9. These are identification questions.
Select appropriate answer options for each publication.

10. Consult Appendices E and F for circulation information.

12. Consult Appendices E and F for cost information.

Theme of Publication

14. Classify publications according to readership interests.

0 = Home/garden/woman's service includes the following types of publications: Better Homes & Garden; Farm Journal; House and Garden; Ladies' Home Journal; Mademoiselle; Organic Gardening; Vogue; Woman's Day.

1 = Family/health/science includes the following types of publications: Bio Science; Family Health; Parents; Prevention; Science; Science Digest; Science News.

2 = Current news includes the following types of publications: Chicago Tribune; Los Angeles Times; Washington Post; New York Times; New Orleans Times-Picayune; Newsweek.

3 = General interest/editorial includes the following types of publication: National Enquirer; Consumer Reports; Reader's Digest.

4 = Other includes the following type of publication: National Geographic.

Article Length

15. Measurement - Use 12" plastic ruler

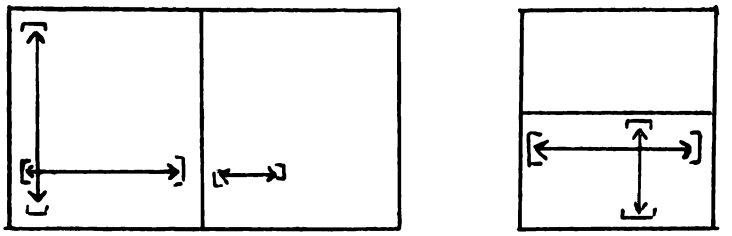
Measure from top to bottom of picture, headlines, article copy.

At bottom, include bottom line of article, picture, tables.

Measure side to side beginning/ending with first letter of first word, and last letter of last word.

Include margins if they are contained within the copy; not around.

Example:



Include tables, pictures, recipes in the count. If sub-article included in main story and referred to in the text include with total copy count. If sub-article is not referred to in the text, consider it as a separate article for evaluation.

Measure in inches. Example: An article in a column 3" wide and 28" long has a total length of 74" (3 x 28).

Visuals, subject

17. More than 50% of the human body must show in visual to check "people."

Page

19. Divide the total number of pages in publication by three. Use first page of article to position in relation to publication.

Example: If article begins on page 24 of 48 pages of publication - it would fall in the middle third. 48 ÷ 3 = 16. First third -- pp. 1 - 16; Middle third - pp. 17 - 32; Last third - pp. 33 - 48.

Article Type

20. 0 = feature - has local interest/appeal; in magazines - human interest slant

1 = editorial - located in editorial section; signed by editor

2 = news - gives information about current happening, meeting, study

3 = recipe - contains at least one recipe

4 = health - not news, but relates to health characteristic

5 = science - mentions specific study

6 = other

Title Word

21. Select word from the list. If 2 words in title, count the first word appearing in the headline. First sentence of article may be used to clarify word choice.

Part II - How it is Said

Characteristics

Exclude from word count the following: Preface statements to articles, brief segment phrases between paragraphs or recipes, articles (a, an, the), printed numbers (i.e., 26, 34, 18); abbreviations.

Count hypenated words as one word.

Count a colon (:) as 2 sentences. Count a semicolon (;) as 1 sentence.

Count as separate paragraphs if bullet (.) used to mark points.

22. Short sentences - Average sentence length less than or equal to 20 words. Count words in sentences in random sample. Divide by number of sentences for average. Select random sample from Table 9.

23. Short paragraphs - Paragraph length less than or equal to four sentences per paragraph. Divide number of sentences by number of paragraphs counted. Select random sample from Table 8.

24. Title - Is title rephrased/tied into the story in the first four paragraphs?

Illustrations

Use entire article

25. Meaningful numbers - Can reader understand numbers in the article? Example: "Ten grams of sodium are consumed per day by Americans." Lay reader cannot relate to this. But reader

can understand: "One gram of sodium is equal to about ½ teaspoon of salt."

Evaluate numbers as used throughout the article. If more numbers are given that are uninterprettable by the reader, check "no."

26. Incident - example or story given concerning the subject. The point is made, with either an incident or real-life situation illustrating it. Reader can relate to this. Need only one example to check "yes."

Fog Index

27. Start with first paragraph. Count to 100 words (or to end of sentence after 100 words is reached). Exclude a, an, the, abbreviations and print numbers.

Count number of sentences in sample.

Average sentence length; divide words by sentences.

Count number of words with three or more syllables. Exclude capitalized words, combinations of short words (bookkeeper, butterfly) and verb forms made into three syllables by adding ed or ing.

Divide number of three syllable words by total number of words to obtain number of hard words.

Add average sentence length to number of hard words; multiply by 0.4 to obtain Fog Index.

Rank as: >6 - 7; >7 - 9; >9 - 11; >11 - 12; >12

Appeal Factors
Information

Use entire article. Evaluate presence, not accuracy.

28. Specific - makes definitive statements concerning salt, hypertension, diet without conditional clauses or embellishment, use of compound subjects.

29. Relevant to title - discusses salt, sodium, hypertension, causes and prevention, food sources.

For 28 and 29 - check for presence of types of statements. If both types present (relevant and irrelevant; some definite and some embellished) check "both."

30. Verifiable - Studies given with researcher name, institution and dates so can be traced. If no studies are reported check "not applicable."

Incentives

Need only one example to check. Evaluate presence, not accuracy.

31. Better health

32. Longer life

33. Other

Intimidation

Need only one example to check. "Do this or else" type of statement. Evaluate presence, not accuracy.

34. Physical

35. Other (mental threats, fear using second person)

Form of Statements

Omit statements that ask a question.

Use first four and last four paragraphs

Report sentences state either verifiable information or can be verified.

0 = Report attributed - direct/indirect quote; cites a specific or general source.

1 = Report, unattributed - no specific source cited, unclear the source of the information

2 = Inference - not verfiable at time made. These statements rely on subjective opinions, conclusions, beliefs or feelings. Uses "ands" for double meanings. They are interpretative, drawn out implications, attempts to make generalizations or predictions, attempts to explain someone's reasons or motives for taking some action. (If content appears as inference, but stated by source other than writer, consider as attributed report statement).

3 = Unattributed - expresses personal opinion.

4 = Imperative - conclusions drawn for reader.

Tally forms of statements. Rank high to low.

36. Record highest form tallied.

Intensity

37. Does article motivate through emotions rather than intellect. Words are used to imply such emotions as fear, anger, disgust, grief, joy, surprise, pleads with reader, uses second person. Use entire article.

Jargon

Use entire article.

38. Abbreviations - Abbreviations should be used with explanations. If no abbreviations are used check "not applicable."

39. In context - Words are understandable to reader from context. Words such as atherosclerosis, heart disease, hypertension should be explained within the article.

40. Terms - should be informative, meaningful. The following are examples of undefined terms: harmful to health; good for you; nutritious food; balanced diet; substantially higher; pure

food; square meal; easy to digest. A minimum of one of these is needed to check "no."

Part III - What is Said

Use entire article to evaluate this section.

Check "not applicable" if information would not be appropriate in context of article to include in category. Omission of a feature is not an oversight, but material is irrelevant to topic.

Use Outline of Selected Salt and Hypertension Facts and References Used in This Study (Appendix L).

Nutrition Information

41. Sodium - presented as a mineral, essential to life.

42. Hypertension - occurs in 15-20 percent of the population. Primary hypertension affects 85 percent of hypertensive population or about 23 million Americans.

43. States salt is not the same as sodium.

44. Gives functions of salt in body.

45. Salt mentioned as iodine carrier.

46. Sodium:salt ratio given (1 tsp = 2 gm sodium; salt is 40 percent sodium).

47. Sources of salt/sodium in food given.

48. Amounts of sodium/salt in the diet:

Adequate but safe: 3-8 gm salt/day

Nutritional minimum: 100-200 mg sodium; 250-500 mg salt/day

Americans consume: 3-6/4-9 gm sodium/day

2-3 tsp salt

6-8/5-10/7-20 gm salt/day

49. Labels of food provide information about salt/sodium.

50. Reasons for, or examples of, salt/sodium used in food processing.

Hypertension Causes

51. Multiple factors cause hypertension

52. Obesity

53. Genetics

54. Race

55. Environmental factors

56. Early introduction of salt

57. Life style/stress

58. High salt intake

59. Other

Authorities

Medical

60. American Heart Association

61. American Medical Association

62. National High Blood Pressure Institute

63. Other - medical

Government

64. Food and Drug Administration

65. Senate Select Committee

66. Other - government

Other

67. Other

Studies

68. Dahl

69. Japanese

70. National Institutes of Health

71. Other

Effects of Hypertension

72. Death

73. Stroke

74. Heart Problem

75. Kidney Problem

76. Personal relation problem

77. Altered self-image

78. Other

79. For coding purposes - record the card number, 1

80. Leave this line blank

81-88. Repeat data codes from identification lines 1-8

Treatment/Prevention

89. Drugs mentioned as a source or type of treatment.

Diet Related Treatment

90. Diet - weight loss plan mentioned.

91. Diet - low sodium foods should be used.

92. Diet - avoid foods high in salt.

93. Diet - alter salt use.

94. Diet - increase use of potassium-rich foods.

95. Combination of above treatments.

96. Other

Positive/Neutral Tone

97. Information - Reader given information to modify salt/sodium intake.

98. Resource - Reader given resources to contact to obtain information about hypertension or salt.

99. Controllable - Reader informed hypertension can be controlled; risk reduced.

100. Genetic - Reader informed hypertension may be genetically or familially linked.

101. Salt referred to as a factor or cause of hypertension.

102. Salt serves a necessary role in some processed foods.

Negative Tone

103. Disease related to faulty diet, too much salt, fat, sugar.

104. Reader told of some discomfort.

105. Someone or something blamed for causing-increasing risk of hypertention to the U.S. population.

106. Industry

107. Government

108. Family diet

109. American diet

110. Restaurants

111. Academia

112. Other

113. Symptoms or disease conditions are emphasized rather than health conditions. Use entire article, include all mention of health or disease and decide which receives more attention.

Value

How is reader motivated to change habits

114. Concern for health, life

115. Other - such as income (saving or making money); defense (power); personal (success, better social or love life).

Methods - Actions Recommended

116. Reader told to buy or use something which would not normally buy. Either generic (vague product) or proprietary (specific brand mentioned).

117. See - Reader told to see someone who he would not normally see.

118. Prepare - Reader told to prepare something which he would not normally prepare.

119. Do - Reader told to do something (like exercise, use less salt, read labels, use fad foods) he would normally not do.

120. Avoid - Reader told to avoid something which he would normally use.

121. Resource - Reader given source for additional information.

122. Combination of the above methods.

Advice

123. Practicable information given to reader.

124. Accurate recipes

125. Food guides accurate

126. Told to see a doctor before starting any program, or just see a doctor.

127. Health "to do's" (exercise) given with time and amounts.

128. Recipe amounts given in common measures. Amounts used in the text of the article should be understandable by reader (i.e., cups, spoons, pounds).

129. Relaxation; reduced stress recommended.

130. Individual is responsible for own health maintenance.

Authority

Use most frequent, generic sources. These need not be accurate, just those cited.

Are certain people, institutions used as sources for information?

131. Government

132. Academia

133. Medical

134. Other - include health, personality, business

Author

135. 0 = Unsigned

1 = Nutritionist

2 = Doctor

3 = Journalist

4 = Other

If multiple authors use the qualifications of the first one listed.

APPENDIX E

CIRCULATION/COST PER ISSUE OF NEWSPAPERS USED IN THIS STUDY

APPENDIX E

CIRCULATION/COST PER ISSUE OF NEWSPAPERS USED IN THIS STUDY

Source: Ayer Directory of Publications (1975, 1976, 1977, 1978). Ayer Press: Philadelphia, PA. Costs - taken from Editor and Publisher Yearbook (1975, 1976, 1977, 1978).

Newspaper / Year	1975	1976	1977	1978
Chicago Tribune				
Mon-Fri	660,826 (.15)	750,707 (.15)	746,069 (.15)	752,861 (.15)
Sunday	1,120,189 (.40)	1,079,945 (.50)	1,113,916 (.50)	1,144,966 (.60)
Saturday	768,267 (.15)	711,100 (.15)	698,925 (.15)	701,124 (.15)
Los Angeles Times				
Mon-Fri	1,005,442 (.10)	1,000,866 (.15)	1,008,995 (.15)	984,233 (.15)
Sunday	1,190,516 (.50)	1,227,377 (.50)	1,265,547 (.50)	1,270,538 (.50)
Saturday	941,763 (.10)	940,437 (.15)	945,254 (.15)	919,894 (.15)
National Enquirer				
Weekly	4,000,000 (.30)	4,048,679 (.30)	4,502,730 (.30)	5,017,569 (.35)
The New Orleans Times-Picayune				
Mon-Fri (morning)	204,976 (.10)	205,105 (.10)	208,354 (.10)	210,846 (.10)
Sunday	304,960 (.25)	306,284 (.25)	310,053 (.25)	315,100 (.25)
Saturday	110,558 (.10)	108,284 (.10)	106,478 (.10)	106,141 (.10)
The New York Times				
Mon-Fri	843,267 (.20)	806,495 (.20)	803,123 (.20)	820,239 (.20)
Sunday	1,419,329 (.60)	1,414,515 (.60)	1,406,833 (.75)	1,413,104 (.75)
Saturday	694,626 (.20)	670,865 (.20)	654,491 (.20)	657,447 (.20)
The Washington Post				
Mon-Fri	521,114 (.15)	534,400 (.15)	530,031 (.15)	541,074 (.15)
Sunday	702,679 (.50)	736,527 (.50)	741,068 (.60)	762,825 (.75)
Saturday	492,767 (.15)	504,716 (.15)	497,787 (.15)	504,852 (.15)

APPENDIX F

CIRCULATION OF MAGAZINES USED IN THIS STUDY

APPENDIX F

CIRCULATION OF MAGAZINES USED IN THIS STUDY

Source: Ayer Directory of Publications (1975, 1976, 1977, 1978). Ayer Press: Philadelphia, PA.

Magazines / Year	1975	1976	1977	1978
Better Homes and Gardens (monthly)	7,860,582	7,992,037	8,093,646	8,093,646
Family Circle (every 3rd wk)	8,254,039	7,925,679	8,479,519	8,328,930
Family Health (monthly)	975,136	913,723	880,015	929,333
Farm Journal (monthly)	1,839,329	1,543,967	1,554,199	1,452,669
Glamour (monthly)	1,710,785	1,674,420	1,855,835	1,814,702
Good Housekeeping (monthly)	5,611,421	5,019,862	5,312,449	5,081,173
House and Garden (monthly)	1,136,444	1,035,277	1,159,197	1,012,543
Ladies' Home Journal (monthly)	7,018,467	7,001,831	6,080,058	6,037,616
Mademoiselle (monthly)	807,352	873,878	873,686	850,019
National Geographic (monthly)	8,276,668	8,990,341	9,211,957	9,601,727
Newsweek (weekly)	1,839,329	1,543,967	3,012,945	2,991,032
Organic Gard. & Farming (monthly)	840,000	1,040,000	1,000,000	1,231,000
Parents' Magazine (monthly)	2,020,651	1,529,303	1,506,103	1,505,241
Parade (weekly)	18,888,217	18,888,217	19,033,098	19,376,628
Prevention (monthly)	1,250,000	1,520,000	1,650,000	1,938,000
Reader's Digest (monthly)	18,817,825	18,487,284	18,164,833	18,512,453
Science (weekly)	152,471	147,407	140,169	145,156
Science Digest (monthly)	152,892	150,788	150,788	153,141
Science News (weekly)	97,297	97,297	120,929	151,329
Vogue (monthly)	636,323	668,011	770,954	090,863
Woman's Day (15 times/year)	7,901,939	7,552,856	8,164,817	8,240,306

APPENDIX G

PRINT MEDIA SOURCES USED IN THIS STUDY CLASSIFIED BY THEME OF PUBLICATION

APPENDIX G

PRINT MEDIA SOURCES USED IN THIS STUDY CLASSIFIED BY THEME OF PUBLICATION

Theme of Publication				
Home/Garden/Woman's Service	Family/Health/Science	Current News	General Interest/Editorial	Other
Better Homes and Gardens	BioScience[a]	Chicago Tribune	National Enquirer	National Geographic
Farm Journal	Family Health	Los Angeles Times	Consumer Reports	
House and Garden	Parents	The New Orleans Times-Picayune	Reader's Digest	
Ladies' Home Journal	Prevention	The New York Times		
Mademoiselle	Science	The Washington Post		
Organic Gardening	Science Digest	Newsweek		
Vogue	Science News			
Woman's Day				

[a]Article in this publication used only for analysis of Physical Characteristics, Part I of Evaluation Form of Print Media Articles on Salt and Hypertension.

APPENDIX I

COMPARISONS OF SENTENCES PER PARAGRAPH IN TOTAL AND RANDOMLY SELECTED SAMPLES OF MAGAZINE ARTICLES

APPENDIX H

COMPARISONS OF SENTENCES PER PARAGRAPH IN TOTAL AND RANDOMLY SELECTED SAMPLES OF NEWSPAPER ARTICLES

Source (Newspapers) (n = 10)	Article Length (paragraphs)		Mean Paragraph Length (sentences)	
	Total	Random	Total	Random
Chicago Tribune	20	9	2.9	2.7
Chicago Tribune	11	8	1.0	1.0
National Enquirer	10	6	1.8	1.5
National Enquirer	18	9	1.3	1.7
New Orleans Times-Picayune	21	9	1.4	1.4
New Orleans Times-Picayune	13	8	1.9	1.6
Los Angeles Times	16	9	2.8	2.7
Los Angeles Times	25	9	2.2	2.2
New York Times	13	8	1.9	1.9
Washington Post	10	6	1.4	1.5
mean			-	-[a]

[a]No significant difference between means. Standard error of the mean 0.1; Wilcoxon paired signed rank test $p < 0.05$

APPENDIX K

COMPARISONS OF WORDS PER SENTENCE IN TOTAL AND RANDOMLY SELECTED SAMPLES OF MAGAZINE ARTICLES

APPENDIX K

COMPARISONS OF WORDS PER SENTENCE IN TOTAL AND RANDOMLY SELECTED SAMPLES OF MAGAZINE ARTICLES

Source (Magazines) (n = 10)	Article Length (sentences)		Mean Sentence Length (words)	
	Total	Random	Total	Random
Changing Times	91	23	19.4	20
Consumer Reports	144	25	16.3	16.6
Good Housekeeping	31	19	17.4	17.7
Good Housekeeping	51	21	13.4	11.8
Mademoiselle	44	19	13.0	12.6
Prevention	70	21	17.7	16
Prevention	142	25	16.1	16.6
Reader's Digest	55	21	18.2	19.4
Reader's Digest	79	22	16.0	17.4
Vogue	48	19	18.1	17.7
mean			-	-[a]

[a]No significant difference between means. Standard error of the mean 0.64; Wilcoxon paired signed rank test $p < 0.05$

APPENDIX L

OUTLINE OF SELECTED SALT AND HYPERTENSION FACTS AND REFERENCES USED IN THIS STUDY

APPENDIX L

OUTLINE OF SELECTED SALT AND HYPERTENSION FACTS AND REFERENCES USED IN THIS STUDY

Topic	Facts As Used	Reference[a]
Sodium	Mineral, essential to life	1
	Primary taste	7
Hypertension	23-24 million people in the United States have hypertension	2, 3, 4
	35 million adults in the United States have hypertension	5
	Only 11 million people in the United States with hypertension are being treated	2
	If a specific, organic cause for the hypertension cannot be found, it is called primary	3
	85-95 percent of all hypertension patients have primary hypertension	3, 7
	15-20 percent of the adults in the United States have hypertension	6, 7
	Hypertension is a sustained increase in arterial blood pressure:	
	140/90	2, 5
	160/95	3, 7
Salt and Sodium	Each molecule of salt is approximately 40 percent sodium	6
	One teaspoon salt contains approximately 2400 mg sodium	6
Function of Salt in the Body	Renin-angiotensin system and sodium balance	3, 6
Iodine Carrier	A sodium restricted diet should be carefully evaluated for adequate iodine content when prolonged sodium restriction is required.	6
Food Sources of Sodium	Consult U.S.D.A. Handbook 456. Nutritive Value of American Foods.	6, 7

Topic	Facts As Used	Reference[a]
Amounts of Salt		
American Diet	Sodium - 5 gm/day	4, 6
	Salt - 10-15 gm/day, 2-3 teaspoons salt	3, 6
Metabolic Equilibrium	Sodium - .04-.2 gm/day	3
	Sodium - .09-.23 gm/day	6
Therapy for Hypertension	Sodium - 2-3 gm/day, plus weight loss	4, 6
	Sodium - .2-.25 gm/day	7
	Sodium - .4-.5 gm/day	3
	Salt - 1 gm/day	3
Low Sodium Diets	Mild - 2.4-4.5 gm sodium/day Moderate - 1 gm sodium/day Strict - .5 gm sodium/day	6
	Limitation is rarely below 1 gm sodium/day unless hypertension is complicated with congestive heart failure	4
Labels	Food labels on some products contain information about sodium content	6
Food Processing	Some sodium-containing compounds are used in food processing	6
Causes of Hypertension		
Multiple Causes	Hypertension is a symptom, not a disease	6
	A number of factors may be involved in hypertension	2, 3, 5, 7
Obesity	An association has been made between blood pressure and body weight.	2, 3, 4, 6, 7
Genetics	Hypertension has been observed to run in families	2, 3, 4, 5, 6, 7
Race	Blacks are more prone to have hypertension than whites	2, 3, 4, 5, 6, 7
Environmental	Smoking has been implicated in the occurrence of hypertension	4, 5, 6, 7

Topic	Facts As Used	Reference[a]
Early Introduction of Salt	For persons at risk from developing hypertension it may be a reasonable possibility that a low-sodium intake begun at an early age may give some protection.	3, 4, 6
Life Style/ Stress	Emotions and stressful life styles may contribute to the occurrence of hypertension	2, 3, 4, 5, 6, 7
High Salt Intake	It is still unknown whether salt intakes induce hypertension	2, 6, 7
	Evidence relating high salt intakes and hypertension is circumstantial	3, 4
Other Causes of Hypertension	Secondary causes - tumor of adrenal glands	2, 4
	Age of individual - Blood pressure rises with age; especially after 65 years	4, 5, 7
	More adult men have hypertension than adult women until the age of 50; after menopause the incidence of elevated blood pressure in women rises.	4, 7
Sources of Information		
American Heart Association		6, 7
American Medical Association		2
National High Blood Pressure Information Center		5
American Academy of Pediatrics		3, 6, 7
Scientific Research Cited		
	Rat and human studies on effects of salt in the diet and blook pressure - Lewis Dahl	3, 4, 6
	Northern Honshu in Japan and a mean salt intake of 26 gm/day	4
	National Institute of Health	5
	Kemper's Rice Diet	3, 6
	Louis Page	3
	Tobian and kidney transplant in rats	3

Topic	Facts As Used	Reference[a]
Effects of Hypertension		
Death	Untreated hypertension increases the likli-hood of premature death	2, 4, 7
Stroke	Persistent high blood pressure may affect the brain leading to a stroke	2, 4, 5
Heart Problem	The heart is the organ most commonly damaged by high blood pressure.	2, 4, 5, 6, 7
Kidney Problem	Hypertension reduces kidney function	2, 4, 5, 6, 7
Other Physical Problems	Eyes may be affected by hypertension	2, 7
	Brain may be affected	7
	In most cases, hypertension is painless and produces few symptoms - insomnia, dizziness. Cannot document a "hyper-tensive personality"	5
Treatment of Hypertension		
Drugs	Drugs may be prescribed from four classes: diuretics; substances that inhibit the sympathetic nervous system (resperine, methyldopa or propranolol); vasodilators (hydralazine); guanethidine in combin-ation with another drug.	2, 3, 4, 6, 7
	Complications and side effects listed	4
Diet - weight loss	Calories should be adjusted to attain the ideal body weight.	2, 3, 5
	In some cases a decrease in blood pressure accompanies weight loss	4, 6, 7
Diet - low sodium foods	Fruits are low in natural sodium	3, 6, 7
	Use herbs and spices	6
	The degree of sodium restriction depends upon the severity of hypertension	6
Diet - avoid foods high in salt	Salty foods to be omitted from the diet include: Smoked, processed or cured meats and fish; meat sauces; salted snack foods; prepared condiments and salad dressing; salt and salt in any form (MSG): sauerkraut; butter; cheese; kosher foods.	6, 7

Topic	Facts As Used	Reference[a]
Diet - alter salt use	No salting of foods when preparing; may use substitutes	2, 6, 7
Diet - potassium	There may be a loss of potassium due to prolonged diuretic therapy.	4, 6, 7
	Potassium-rich foods include: bananas, prunes, grapefruit, canteloupe,oranges, potato	1, 7
Combination of Factors	To control high blood pressure the physician may prescribe medication; weight loss; reduced salt intake.	2, 3, 4, 6
Other Treatments of Hypertension	Reduce cigarette smoking	2
	Adjust lifestyle	2, 3
	Education of public about hypertension	3
Advice About Hypertension		
	Seek medical advice	2, 5
	Drugs and medications should be tailored to the individual	3, 4, 6, 7
	Success of treatment depends on patient's understanding and following the treatment	2, 5, 6

[a]References

1. American Heart Association 1977. Facts about hypertension.

2. American Medical Association 1977. Your blood pressure.

3. Bennion, Marion 1979. Hypertension. In: Clinical Nutrition. New York: Harper and Row. pp. 506-517.

4. Biné, Rene 1977. Cardiology. in: Nutritional Support of Medical Practice. H. Schneider, C. Anderson and D. Coursin (eds.) Hagerstown, Md.: Harper and Row Publishers, Inc. pp. 254-258.

5. High Blood Pressure Information Center 1979. Watch your blood pressure. Bethesda, Md.

6. Krause, Marie and L.K. Mahan 1979. Nutritional care for patients with cardiovascular disease. Food, Nutrition and Diet Therapy. 6th ed. Philadelphia: W.B. Saunders, Co. pp. 579-605.

7. Mikkola, Margaret 1978. The cardiovascular system. In: Nutrition in Clinical Care. Rosanne Howard and Nancie Herbold (eds.) New York: McGraw-Hill, Inc. pp. 311-347.

APPENDIX M

PRINT MEDIA SOURCES USED IN ANALYSIS OF MESSAGE CHARACTERISTICS AND MESSAGE ACCURACY

APPENDIX M

PRINT MEDIA SOURCES USED IN ANALYSIS OF MESSAGE CHARACTERISTICS AND MESSAGE ACCURACY

Media	(n)	% of articles
Newspapers		
Chicago Tribune	(4)	5
Los Angeles Times	(7)	8
National Enquirer	(19)	23
The New Orleans Times-Picayune	(8)	10
The New York Times	(7)	8
The Washington Post	(5)	6
Magazines		
Better Homes and Garden	(1)	1
Consumer Reports	(1)	1
Family Health	(1)	1
Farm Journal	(1)	1
House and Garden	(2)	3
Ladies' Home Journal	(1)	1
Mademoiselle	(1)	1
National Geographic	(1)	1
Newsweek	(1)	1
Organic Gardening & Farming	(2)	3
Parents	(1)	1
Prevention	(13)	15
Science	(1)	1
Science Digest	(1)	1
Science News	(2)	3
Vogue	(3)	4
Woman's Day	(1)	1
Total	84	100%

APPENDIX N

DEFINITION OF TERMS USED IN THIS STUDY

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DEFINITION OF TERMS USED IN THIS STUDY

Advertisement - A paid notice, announcement or public service message about a product or service.

Accuracy - Agreement of selected information presented in popular print media articles and the Facts outlined in Appendix L on nutrition, causes of hypertension, treatment of hypertension and sources of hypertension information.

Appeal - Combination of information, incentive, and intimidation observations.

Article - Any of the listings in Appendices A and B. A non-fictional prose composition which appears in a newspaper or magazine.

Diet - A modified intake of food, especially in relation to the consumption of salt.

Error - Disagreement or inconsistency of selected information as presented in popular print media articles and the Facts outlined in Appendix L on nutrition, causes of hypertension, treatment of hypertension and sources of hypertension information.

Facts - Information selected from nutrition text books, American Heart Association pamphlets and the High Blood Pressure Information Center publications regarding hypertension and salt in the diet. (Appendix L).

Hypertension - A condition characterized by high blood pressure.

Incentives - Combined observations of better health, longer life, other. (Questions 31, 32, 33 of Appendix C.)

Information - Combined observations of specific, relevant and verifiable information. (Questions 28, 29, 30 of Appendix C.)

Intimidation - Combined observations of physical, other. (Questions 34, 35 of Appendix C.)

Nutrition/Hypertension Statements - All statements in this study under the categories: nutrition information, causes of hypertension, authorities cited, treatment for hypertension.

Popular Print Media - Articles which appeared in periodicals used in this study that were published from 1975 to 1978. Newspapers used were: Chicago Tribune, Los Angeles Times, National Enquirer, The New Orleans Times-Picayune, The New York Times, The Washington Post. Magazines used were indexed in the Reader's Guide to Periodical Literature, Family Circle, Prevention, and Woman's Day.

Readability - Determined by number of sentences per paragraph; words per sentence; Fog Index; title of article rephrased in the opening four paragraphs of the article; meaningful numbers; and use of an incident.

Salt/Sodium - Ingredient used or found in food; a necessary element in the human body. Salt is also sodium chloride; forty percent by weight of sodium chloride is sodium.

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