Attitudes and media usage behavior surrounding nutrition

A survey among young families in Germany

Tobias D. Höhn, Charmaine Voigt

Introduction and current state of research

According to Rogers [3] nutrition communication is defined as any type of human communication relating to nutrition. Even now, almost three decades after the field of health communication was established, the influence of media consumption on the dietary behavior of the population remains a blind spot of the field [4]. This is surprising for several reasons. Mass media reaches all population groups and constitutes an integral part of everyday life, due to the amount of time it occupies and the breadth of its reach [5]. Furthermore, it enjoys a high level of overall trust, despite increasing skepticism of the media in some individual population groups [6]. In addition, the topic of "nutrition" has undergone a process of mediatization [7]. It has evolved from something about which consumers are passively informed into a cross-cutting issue that is a constant fixture in nearly every journalistic department and editorial office, one that ranges from the presentation of news and life hacks to entertainment and dialog formats (especially in the online sector). According to a research survey by the Arbeitsgemeinschaft Fernsehforschung (AGF) (Working Group for Television Research) and the Gesellschaft für Konsumforschung (GfK) (Society for Consumer Research) between 2005 and 2008, the number of hours of broadcasting on nutrition/ cooking on German television rose from 355 to 1,262 [8]. On top of this, Germany has a wide range of online forums, social media groups, and around 1,000 food blogs. It can therefore be assumed that the Internet represents an important data pool for questions about nutrition, purely due to the wide range of information available to the user.

Despite the ever-growing availability of information, there has been no increase in the

Abstract

Research into health communication has shown that the media is not the only influencing factor when it comes to health-related cognition, emotion, and behavior, but it can be a relevant one [1]. Nutrition is an omnipresent topic in mass media, but it only has a minimal effect on the dietary behavior of the population [2]. Therefore, this study aims to take young families as an example in order to analyze how a specific target group informs themselves about nutrition and which sources of information it considers trustworthy. In order to achieve this, 751 online surveys of young families, pregnant women, and couples that would like to have children were evaluated. The results show that nutrition knowledge is composed of several interpersonal and media-based information sources, and that trust in media coverage is not always paramount. This results in the target group having complex opinion-forming and negotiation

Keywords: mass media, nutrition, family, journalism, nutriCARD

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number of consumers who follow the nutrition recommendations of expert associations, for instance, as documented by the report of the German Nutrition Society, conducted on behalf of the German government [9]. One reason for this may be the passive and habitual dietary behavior of consumers and a lack of active reflection on nutrition.

In a self-critique written more than 40 years ago, the German Nutrition Society said: "Nutritional habits are among the most stable human behaviors, so it seems naive to assume that a person could be convinced, with just a few arguments, that their way of eating and drinking is wrong and that they need to learn a new way, in order to avoid endangering their health." [10, p. 435] Consumers hardly see any need to change their nutritional habits. The majority of the population is convinced that their diet is healthy and balanced [11]. Indeed, in 2018, "92% of respondents said that it is important to them to eat healthily" [12, p. 6]. Straßburg highlights the generalized phenomenon of underreporting and overreporting among consumers in nutrition surveys [13].

The gap between the importance ascribed to the media in the field of food and nutrition and the nutritional behavior of the population poses a question. In order to determine future communication strategies, which channels and communication patterns actually shape the public's attitudes towards nutrition (public understanding of science) [14]? Intrigue into the findings of the explorative online survey from 2016, presented here, presents a starting point for the target group of young and expectant parents. The following four research-guiding questions are intended to record how media is received by the study participants and their attitudes towards nutrition, at the micro level: (1) What particular attitudes surrounding the topic of nutrition can young families, pregnant women, and couples who want to have children be said to have? (2) What sources of information does this target group favor, particularly regarding information about nutrition and pregnancy? (3) What role do the Internet and social media play in the search for information about nutrition? (4) Which of these sources of information do the study participants perceive as trustworthy?

Study population and methodology

In line with the preventive approach of the Competence Cluster for Nutrition and Cardiovascular Health (nutriCARD), three closely related target groups were selected for this study: couples that would like to have children, pregnant women, and families with one or more children under the aged 6 or younger. The study highlights the fact that key life milestones such as the (imminent) birth of a child can lead people to reflect on previous behaviors and nutritional habits, and this, in turn, may lead to lifestyle changes. It is also important to remember that the first few years of life lay the foundation for healthy eating in children [15]. Leonhäuser et al. also come to this conclusion in

their survey on everyday food habits in family households. "The sense of responsibility with regard to a healthy diet (which, according to many mothers, only developed fully with the birth of their children), is linked to the awareness that the framework for later eating habits is established during childhood and adolescence" [16, p. 118]. Specific target groups were also selected because informational measures tailored to specific reference groups can be planned and implemented more efficiently and effectively in practice [17].

A standardized online survey was chosen as the survey method, in order to generate an explorative picture of the characteristic features. The survey was programmed as an online questionnaire using the EFS Questback software. A pre-test with 25 study participants, conducted in November 2015, led to some minor adjustments, such as the addition of special interest media in the section about media use behavior, due to the number of responses where "other" was selected. During the field phase (from 4 February to 31 March 2016), the survey was promoted on social media, via expert services, through supporting media work and by distributing brochures to ten kindergartens in the Leipzig region. As a result, people from all 16 German federal states took part in the survey, with regional hot spots in Saxony (28.7%), North Rhine-Westphalia (14.6%) and Bavaria (11.8%), which is a result of how the distributors' networks were structured. During the study period, 1,097 people took part in the online survey. Adjusting for the participants who did not belong to the target group (n =101) and the dropouts (n = 245), a sample of 751 fully completed questionnaires was obtained. A drop-out rate of 22.3% is not unusual for online surveys. Possible reasons for drop-out may include the length of the questionnaire (40 questions), and the fact that the questions could appear monotonous to the study population due to the many scale levels used. The sample population was composed of the following: 77.1% of those surveyed (n = 579) had one or more children up to 6 years of age. 10.7% (n = 80) were pregnant at the time of the survey, and 12.3% (n = 92) wanted to have children. The average age of the study participants was 32 years. Nine out of ten of those surveyed were between 20 and 39 years of age, and 94.7% of the study

Dimension	Affective	Cognitive	Conative
Practice	It is important to me that my diet contains as little fat as possible.	A balanced diet is the prerequisite for a long and healthy life. 'Light' products are better than standard food products.	
Public communication	I'm sick of hearing which foods I should and shouldn't eat. There is too much hype about nutrition.	At the moment, it is fashionable to talk about correct nutrition. The topic is overrated.	
Purchasing behavior			When it comes to buying food, I mainly buy fresh products instead of preserves, frozen food, or ready-made products. I know exactly what I want to buy before I do my shopping.
Time and effort required		It isn't worth putting in the effort to have a healthy diet because you don't know if it's doing you any good. In day-to-day life, meal preparation should be quick.	

Table 1: Matrix of items used to determine attitudes towards nutrition

subjects were women. The population that was surveyed had an above-average level of educational attainment. 87% had at least an Abitur (German school leaving examination that allows access to university studies), and 61.9% had at least a university degree.

The survey, which covered several topics, was divided into four main areas. In the first section, the participants were asked about their attitudes towards nutrition and dietary behavior, particularly during pregnancy. The second part investigated the participants' general media usage behavior, and the third part investigated the topic of media use and nutrition. After that, sociodemographic data was recorded. The questions were mainly asked with one-dimensional response options or with item responses in which the rating scales were mainly structured in a bipolar manner (1 = very important, 3 = indifferent, and 5 = not important). In addition to the option fields and the four, five, and seven-step scales, sliding scales were also used. The items given as possible responses were aimed at assessing importance, and were based on established studies, such as the National Nutrition Survey II (NVS II) [18]. An example of the composition of items in the questionnaire (attitude towards nutrition section) is provided in • Table 1. While questions about preferences and relevance were aimed to stimulate more cognitive statements and demanded more thought from the study participants, questions about opinions and evaluations were designed to produce a more affective assessment of nutrition. The conatively-oriented items provide direct indications about dietary behavior [19]. Care was taken to ensure all of the different forms of the items were covered in the survey. The operationalization of the term "attitudes

towards nutrition" was achieved through specific statements about the following four dimensions: "practice", "public communication", "purchasing behavior" and "time and effort required".

The evaluation was done using SPSS 22. Mean values, frequencies and variances were calculated descriptively. In addition, t-tests and variance analyses were carried out for mean value comparisons. For inferential statistical calculations, a significance level of \leq 0.05 was used. For multiple tests, the Bonferroni correction was implemented.

Results

The results below are presented and analyzed in the order in which the questions appeared.

Attitudes towards nutrition

The study population is characterized by a relatively high level of awareness about nutrition. For the majority, eating and drinking is either very important (53.1%) or important (45.1%). Nine out of ten respondents considered a balanced diet to be a prerequisite

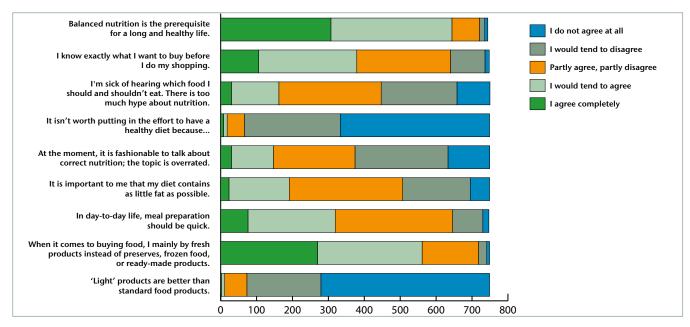


Fig. 1: Attitudes towards nutrition (absolute number of mentions)

for a long and healthy life. However, there are major differences in how the respondents assess the discussion of "correct" nutrition (◆ Figure 1). The responses demonstrate great barriers in integrating these habits into everyday life. For four out of ten respondents, day-to-day meal preparation should be quick. 91.7% of the study participants consider an evening meal to be successful if "it gets done quickly." Very few of the respondents (4.2%) used ready-made or frozen products. The importance of animal-based and plant-based fats was evaluated as ambivalent. A quarter of the respondents considered it important that foods contain as little fat as possible, and a third paid no attention to fat at all. 42.2% paid attention to fat to some extent. Considering that the nutriCARD competence cluster is developing cardiovascular-protective food products, the acceptance of these products [20] is of particular interest, but attitudes towards the 'light' products already available on the market are also worth noting. Overall, skepticism towards both product groups is the prevailing attitude among consumers, although there are some clear differences in opinion.

This skepticism towards products that have been reformulated to be more heart-healthy [21] begs the question of how trust in food products can be strengthened in general. The respondents were asked of the importance

they ascribe to various measures aimed at building confidence in food products using a five-point Likert scale. The value 1 corresponds to a very high level of importance, the value 5 corresponds to a very low level of importance. The respondents considered transparency in product testing to be the most important factor (mean value/M = 1.61), followed by government bills and controls (M = 1.77) and tests performed by independent institutions (M = 1.79). Evaluations by NGOs (M = 1.94), a nutrition table on the packaging (M = 1.96) and labeling with organic seals or similar labels (M = 1.79) were also considered proven methods of determining trustworthiness. Little store was set by QR codes (M = 3.49). In general, respondents that graduated from a Hauptschule (secondary school providing lower secondary education) rated all measures as less important compared to respondents with higher qualifications. There were only marginal differences between academics and non-academics. The only significant distinction between these two educational groups was their attitude towards the use of organic product seals. University graduates ascribe more importance to such labels than those without a university degree. There was a clear desire for authentic foods among the respondents.

Regarding the purchasing of food, the five most important criteria for the respondents were freshness (551 mentions), taste (499), few additives (433) and organic products (394). However, the analysis shows some differences, depending on the respondents' level of educational attainment (* Figure 2). In percentage terms, respondents with a lower secondary school (Hauptschule) certificate mentioned the characteristics freshness, locally sourced, good for health, seasonal, organic, and not genetically modified, less frequently than respondents with a higher level of education. In contrast, they more frequently mentioned the characteristics of taste, low price, and plant fats, rather than

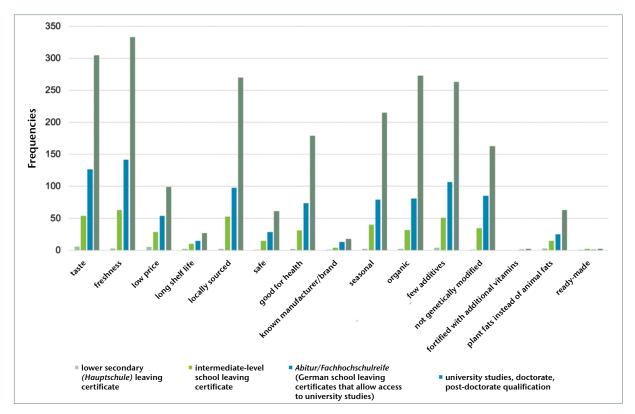


Fig. 2: Criteria used when purchasing food, organized by level of educational attainment (absolute number of mentions)

animal fats. A representative survey of food trends conducted in North Rhine-Westphalia in 2017 identified similar purchasing motives. More than 70% of young adults pay attention to low prices and special offers when buying food [22].

Media consumption behavior

Overall, the study participants can be described as having a broad and deep range of media consumption behavior, but there were no significant differences between the three study groups. Based on a comparison with other studies, such as the ARD/ZDF online study conducted in 2017 [23], usage behavior can be described as age-appropriate. The Internet emerged as an important source of information for respondents, in terms of media usage behavior. 96.2% of respondents use the Internet to perform a quick search for information. 77.9% of respondents stated that they use the Internet on a mobile device (smartphone or tablet) every day. The percentage of respondents that used the Internet on a PC every day was 49.1%.

In addition to questions about intensity of use, respondents were also asked about their preferences, including television programs, newspapers, and websites. The respondents were able to give three responses for each type of media. In the television provider category, public channels were slightly more popular than commercial ones, but it is significant to note that the respondents with lower levels of educational attainment were more likely to watch commercial television channels. In the radio category, public stations had an almost 60% share. In the newspaper category, the regional daily paper came in at first place, followed by news magazines, weekly papers, and national daily papers. Higher levels of educational attainment correlated with more frequent preferences for national papers and weekly magazines, whereas lower levels of educational attainment correlated with more frequent preferences for tabloids and advertising papers. Print publications with a focus on nutrition (4 mentions) or on parenting/ family (31) have a relatively low level of acceptance. Of all the titles available on the magazine market aimed at families with children, the magazine "Eltern" or "Eltern family" has by far the highest reach and is the most well-known (57.6%). 9.1% of respondents said that they read this magazine regularly, and an additional 24.1% said that they read it from time to time.

Across all levels of educational, the most frequently used websites were social networking sites, Facebook in particular. Here, the decisive parameter was age. Almost half of the respondents aged 29 years or under said it

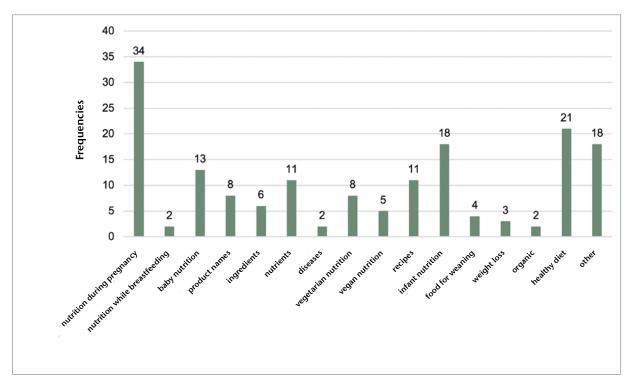


Fig. 3: **Search terms in search engines** (keywords, n = 166)

was their favorite. Websites attached to other media (such as daily newspapers, news magazines and television stations) came second, followed by search engines. Websites focusing on pregnancy/parenting were primarily utilized by younger respondents.

Almost half of the respondents (44.6%) used advice books on pregnancy and nutrition; this also applies to those for whom the pregnancy was some time ago. A third of those in the group with one child or children up to six years of age found packaging labels and/ or product descriptions helpful. For women who were pregnant for the first time, this was a less relevant source of information (17.4%). The respondents set almost no score by other printed products such as brochures from public bodies, magazines or corporate media products from companies (e.g. newsletters sent by post from manufacturers of baby food or diapers).

Searching for information about nutrition, particularly on the Internet

About one in ten of the respondents (10.4%) said that they already feel well-informed and do not lack any information about nutrition. This figure was lowest among women who

were pregnant for the first time, at 4.3%, and was highest among families with a child/children and women who were currently pregnant, at 21.3%. Often, when it came to questions about nutrition, respondents (n = 751, up to three answers were possible) relied on nutrition advice books (42.9%), personal advice from midwives (31.4%), physicians (23.8%) or relatives/friends/acquaintances (29.2%).

Depending on the family status (couples wishing to have children, pregnant for the first time, families with child/children), among those who were pregnant for the first time, the most frequently mentioned sources were physicians (40.2%) and relatives/friends/acquaintances (38.0%). Among this group, the figure for midwives was "only" 26%, but this may be due to the respondents being in an early phase of pregnancy, meaning they, so far, had little contact with a midwife.

Nevertheless, the Internet is, by far, the most frequently mentioned source used to answer questions about nutrition at 81.1%. Furthermore, in the YouGov food trend study, search engines (41%) and YouTube (34%) ranked among the most important media channels [22]. Almost all study participants in the online study of young families (95.4%) started off with a search engine. An overview of the most frequently mentioned search terms can be found in ◆ Figure 3. These terms were found by asking respondents to enter keywords in the open response question and then categorizing them in a qualitative manner in the subsequent analysis. Among the 166 different entries, there were three dominant subject areas: "nutrition during pregnancy" (which included entries such as "sushi during preg-

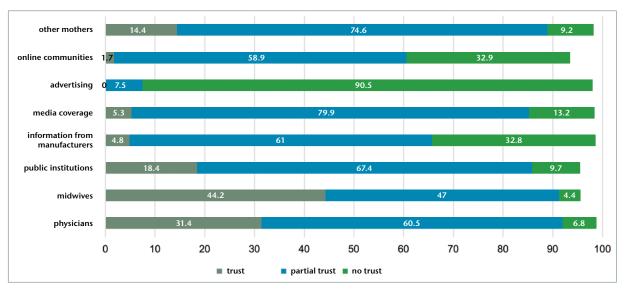


Fig. 4: Trust in sources of information (in %)

nancy" and "foods you can't eat during pregnancy"), "healthy diet" and "nutrition for infants". In addition, "baby nutrition", "nutrients" and "recipes" are frequently searched keywords. In the "other" category, respondents mentioned various other individual terms, including "studies", "Stiftung Warentest" (a German consumer magazine) and "superfood".

11.5% of respondents also used Facebook as a source of information about nutrition. Facebook groups with a local connection, such as "Düsseldorf Mamis" are used to find this kind of information, but they are also a way to exchange information about topics that are still underrepresented in other information channels: topics such as "Baby led weaning" (15/86 open statements), and alternative forms of nutrition such as "vegan child nutrition".

The effects of media consumption on responses to questions about nutrition

In addition to access to information, the respondents' evaluation of the source was also recorded using the question: "Who do you trust when it comes to information or advice about health-conscious nutrition?" The picture here is highly differentiated (* Figure 4). Midwives enjoy the highest level of trust (44.2%), followed by physicians (31.4%). 90.5% of respondents said they had "no trust" in advertising and 32.8% said the same about the manufacturer's product information. For almost all variables, the most frequent category of response was "partially agree, partially disagree." This ambivalence is particularly evident when it comes to mass media coverage (79.9%), other mothers (74.9%) and state institutions (67.4%). Young adults are also more likely to trust their own family (63%), friends and acquaintances (54%), Stiftung Warentest (a German consumer magazine) (55%) and consumer advice centers (54%) than media companies or food manufacturers [22].

Despite the low level of trust in the journalistic integrity of established media, as described above, 61% of respondents said that they have previously reevaluated or changed their eating habits based on media coverage. Awareness was highest among respondents with a university degree at 67.2%. In contrast, the figure for those with a lower secondary school (Hauptschule) leaving certificate was 42.9%. There was also a correlation between awareness of nutrition and media consumption (regardless of education level and family status). Viewers of public TV channels were more likely to actively reflect on their nutrition habits (68.3%) compared to viewers of commercial TV programs (56.4%). With regard to this same parameter, the printed products sector was led by the weekly newspaper "Die Zeit" (77.4%), followed by national (67.8%) and regional daily newspapers (66.5%). Readers of daily newspapers ascribed greater importance to a healthier diet (p = 0.014), were more likely to buy fresh products (p = 0.046) and were more likely to prefer specialty shops over discounters (p = 0.000). A particularly notable result from the analysis of radio users was that stations with a high proportion of verbal content (Deutschlandfunk, Deutschlandradio, and news and cultural programs from public broadcasters) contributed to increased awareness. Users of these stations reported particularly frequently (68.9%) that they had thought about their dietary behavior. However, an examination of sociodemographic

data such as income, showed that this has no effect on attitudes towards nutrition.

Discussion and limitations of the study

The present explorative study demonstrated three important points. Firstly, the normative significance that the respondents ascribe to healthy eating reaches its limits in incorporating it into everyday life. Secondly, the study confirmed the importance of the media as a key factor of socialization within the information society, and found indications of a connection between media consumption and the likelihood of respondents reflecting on their own diet. Although the usage intensity of newspapers/magazines is low (only 14.9% were daily readers), this type of media contributes the most to reflection about nutrition. The situation is similar for radio stations with a high proportion of verbal content. It was also found that pull communication is increasingly dominant when it comes to nutritional issues, implying that the participating consumers, themselves, decide when and how they retrieve information. Online publications, in particular, benefit from the information's ease of access, constant availability, and variety of multimedia formats, meaning the user can assemble their own customized menu of online resources that they can use to search for specific information, or even comment on and introduce new topics, themselves. This presents a potential opportunity for the communication of messages about nutrition (particularly, information about reformulated foods). Thirdly, with regard to future communication strategies, the study also clearly showed that opinion-forming is a multivariate, dynamic negotiation process that is strongly influenced not only by the mediation of mass media, but by interpersonal expert communication, as evident by the high level of trust in midwives and physicians.

At first glance, it is surprising that six in ten respondents had reevaluated or changed their dietary behavior based on media coverage, as at the same time, trust in the media was low, when it came to questions about nutrition. This contradiction can be explained by the fact that the mass media follow a professional rationale

when considering the selection and presentation of news items [24], and they orient themselves around newsworthiness (characteristics such as negativism, surprise, meaningfulness etc.), which does not always line up with the consumers' information-gathering goals. Currently, traditional mass media, on the supply side, mainly convey information designed to explain topics and orient the consumer (socially relevant topics for forming opinions) [25]. Yet recipients also want media consumption to provide them with bonus information in the form of knowledge they can put into action—information from which they can draw conclusions that are relevant to everyday life. This creates a supply-demand gap that can lead to an increase in cognitive dissonance.

The study's main limitation is the deliberate focusing of the target group. It can be assumed that the respondents intrinsically have a higher level of interest in nutritional issues than the average population, due to their family status and the channels through which the online survey was publicized. It is also clear that people with a medium to high level of educational attainment are strongly represented within the study sample, whereas those with a lower level of education are somewhat underrepresented. This was an explorative study, deliberately designed to exclude the requirement for representativeness, meaning the results cannot be extrapolated to the population as a whole. Therefore, the aim of the study was not to find potential recommendations for measures to be taken, but rather to find an approach that could be useful in further research into societal communication as it relates to nutritional issues. In order to achieve this, it will first be necessary to examine how nutritional issues are presented over a broad spectrum of media formats, in order to determine who the communicators are, which topics are being discussed, and how the topics are communicated. This will be performed in a follow-up study based on a content analysis. The online survey also provides a variety of points of interest to potentially stimulate further research. For example, a follow-up study might focus not only on analyzing the quality of media coverage, but on identifying and qualifying information intermediaries such as search engines, network platforms, video platforms and instant messaging services.

Conflict of Interest

The authors declare no conflict of interest.

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