



# Nutrition-related coverage in German press

## A content analysis of regional and national newspapers

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### Abstract

The specifics of media coverage on nutrition in German press to date had little empirical investigation. The representative study aims at a distinct analysis of appearance, sources and valence of nutrition-related coverage. The quantitative content analysis combines a set of print media in the period of one year. The keyword search, based on a wide definition of the term nutrition, which includes the entire value chain of food and food production as well as eating habits and implied social norms, resulted into 592 coded articles. The average appearance rate of nutrition-related articles in German press is 1.9 per issue. While national publications subordinate nutrition mainly to the science (72/329) and business section (68/329), codings in regional media appear predominantly in sections advice (59/263). The main genre is news report (298/592). The data set shows a heterogeneous range of five main topics: restaurant visits, consumption, cooking, diseases, food production/animal husbandry.

**Keywords:** media coverage on nutrition, nutrition communication, content analysis, nutriCARD

### Citation

Voigt C, Höhn T: Nutrition-related coverage in German press. A content analysis of regional and national newspapers. *Ernährungs Umschau* 2021; 68(7): 134–43.

The English version of this article is available online:  
DOI: 10.4455/eu.2021.028

### Peer reviewed

Manuscript (original) submitted: 07 July 2020  
Revision accepted: 16 January 2021

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### Introduction

Compared to print media, online outlets are able to respond more swiftly by bundling their coverage. Topical sub categories on news platforms such as health/diet (“*Gesundheit/Ernährung*”) [1], lifestyle/food [2] or knowledge/medicine (“*Wissen/Medizin & Ernährung*”) [3] demonstrate a high density of nutrition coverage. Social Media helps fuel the upswing in discourse of diets and nutritional trends. One of Germany’s top food influencer “Sallys Welt” reaches over 60,000 Instagram followers [4] and 1.78 million subscribers on YouTube.<sup>1</sup> Picture-based networks such as Instagram that focus on aesthetically appealing images, relish posts relating to food. Since bloggers and influencers mostly share personal experiences and opinions, biased or even inaccurate information enters the public discourse and is likely to be picked up by journalists [5].

Nagler [6] shows evidence of contradictory nutrition messages in news media, which questions the public’s general trust in official nutrition recommendations. The plurality of traditional and online media outlets causes information overload, effecting the user’s ability to properly apply knowledge to the decision-making process [7]. Each individual faces over 220 daily food-related decisions, the majority of which are made unconsciously [8]. On a collective level, economic interests, political measures and cultural practices are a staple of our nutritional lifestyle. It is therefore unsurprising that nutrition appears as an omnipresent topic in mass media.

On the contrary, current empirical results relating to nutrition in media are scarce [9]. In journalism, the quality of nutritional messages in particular is rather hazy and not

<sup>1</sup> Shortly before publication of this article (end of June), the numbers were nearly 800,000 followers on Instagram and over 1.9 million on YouTube.



sufficiently up to date [10]. Schulz and Hartung [11] show congruence between nutritional media messages and official dietary recommendations based on large-scale content analysis of print media if-then-messages in the German-speaking part of Switzerland. The most recent study on specific characteristics of German nutrition-related coverage was in the mid '90s [12]. The content analysis of German press titles over a period of one year found nutrition-related articles published one out of three days in weekly newspapers and one out of eleven days in daily newspapers. These articles primarily pertained to recurring seasonal topics. "Altogether the formal analysis does not underline the attraction of nutrition issues for journalists" [12: 189].

Presumably, these characteristics have changed in current press coverage. Since "[...] medicine/health and biology dominate science coverage worldwide [...]" [13: 880], nutrition-related topics are expected among science sections. Journalism organizations have scaled back science news sections over time, while the overall presence of scientific evidence and expert statements in news articles has increased [14]. According to Göpfert [15], in Germany, only quality newspapers with a circulation of more than 100,000 copies could afford to maintain science newsrooms.

Following Volpers and Summ [16], science topics in print media can be distinguished as 1) coverage on recent research results or projects and 2) coverage on socially relevant aspects relating to research or academic experts. Consequently, analytical media studies should contemplate the whole newspaper coverage, rather than single newspaper sections.

The aim of the quantitative content analysis presented in this article is to examine whether German newspapers maintain their central tenets of orientation in the field of nutrition. Therefore, the research question asks: What constitutes nutrition-related coverage in regional and national German newspapers? Specific sub questions regarding general frequency, nutritional topics, sources, and bias of coverage are presented in the next section.

The common understanding of the term "nutrition" encompasses the intake of nutrients, vegetable and animal food products, and liquids necessary for energy production and human survival, which, when insufficient, causes disorders and diseases [17]. The definition of nutrition employed here is conceptualized rather generously to display the value chain in every aspect, from agriculture, production, preparation, disposal to marketing. The overarching concept implies educational aspects and mediation as part of nutrition literacy, as well. To put it briefly, we determine the status quo of the field of nutrition journalism beyond the field of food journalism [18].

## Material and methods

According to Früh [19], the empirical method of content analysis, generating relevant information mainly in the field of communication, is suitable for research interests of selectivity, abstraction and classification. Health communication researchers commonly practice content analysis when discussing obesity and nutrition, among other subjects [9, 20]. Krippendorff [21] points out that meaningful findings rely on multimodal material, such as printed articles (textual) and embedded images (visual).

Constructed week sampling for daily publications is an efficient tool in helping communication researchers more easily study health coverage in the media, with an established minimum of six weeks for a representative sample [22]. In order to represent the diverse scope of Germany's press market, we compiled a data set consisting of articles (visuals included) from six different publications. Over a twelve months period (August 2016 to July 2017), we conducted a constructed week sampling of three daily local newspapers from various states (*Hamburger Abendblatt*, *Thüringer Allgemeine*, *Sächsische Zeitung*) and one daily national newspaper (*Süddeutsche Zeitung*). A complete collection of two weekly national publications (*Die ZEIT*, *Der Spiegel*) was added as the project progressed.

The newspaper selection spans the entire range of the socio-political spectrum. Regarding the editorial structure of the press products, some differences are worth noting. The news magazine, *Der Spiegel* with its expansive quarterly circulation of 700,000 stands out among the sample, followed by *Die ZEIT* with 460,000 copies. *Süddeutsche Zeitung* leads the daily newspapers with roughly 295,000 copies [23]. All three quality press titles maintain a science editorial team and corresponding newspaper sections. "In September 2003, *Süddeutsche Zeitung* changed its science coverage from weekly to almost daily" [13: 878]. Of the local newspapers, only *Hamburger Abendblatt* contains a science section. Germany's prominent journalistic organ, *Der Spiegel*, frequently features nutrition-related titles based on a high standard of investigation (♦ Figure 1).

The research consists of individual articles, covering a wide range of nutrition-related topics. An article is understood as any form of journalistic piece, including letters to the editor, which enable insight into the reader's understanding of the topic. The sample excludes weather reports and recipes that are not part of a longer article. The keyword search (*ernährung*; *essen*; *nahrung*; *lebensmittel*; *nahrungsmittel*; *kochen*) is based on the wide definition of "nutrition" described above. Each article that contains one of these keywords was integrated into the data collection.

In order to identify patterns in the text corpus, Früh [19] recommends a specific empirical procedure for topic frequency analyses. Sub-questions and predicted outcomes represent the inevitable starting point of this study, which is divided into four overarching subjects:



- 1) General structure of nutrition-related coverage:
  - a. Does the coverage address a specific readership?
  - b. In which newspaper sections can coverage on nutrition be found?
  - c. Through which journalistic forms is nutrition represented?
  - d. What forms of visualization are used in the coverage?
- 2) Characteristics of content in nutrition-related coverage:
  - a. Which main topics of nutrition are emphasized in the coverage?
  - b. Which foods and food groups are frequently highlighted?
  - c. Which diets and nutritional trends are the subjects of discussion?
  - d. Does the coverage highlight a relationship between certain foods and diseases?
- 3) References and sources of nutrition-related coverage:
  - a. What reasons and events prompt the coverage?
  - b. Who are the main actors in nutrition coverage?
  - c. Is there a special focus on experts from the scientific community, or role models, such as celebrities and professional athletes?
- 4) Bias and connotation of nutrition-related coverage:
  - a. Do the articles portray certain foods in a positive or negative light?
  - b. Are there notable tendencies toward nutritional recommendations, food production and processes, consumer protection or social norms?
  - c. Is the value of information well-balanced or is it regularly optimistic/pessimistic?

Pursuant to the overarching subjects, the research was driven by four key assumptions (Ax). We presume the coverage to be heterogeneously distributed across sections and portrayed diversely towards families and seniors (A1). Corresponding to a broader media observation, topical emphasis on meat is anticipated (A2). The coverage draws primarily upon political and academic players (A3). The general journalistic tone is assumed to be balanced. Since Hamburg holds second place in German vegan-friendly cities of over a million inhabitants [24], we assume a more affirmative reporting towards meat reduction and vegan lifestyle in media published there, explicitly in *Der Spiegel*, *Die ZEIT* and *Hamburger Abendblatt* (A4) (see ♦ Figure 1). The sub-question's terms form the basis for a codebook template, which contains variable definitions, assorted categories and coding protocols. The codebook is composed of four modules (Mx): nine formal journalistic variables, such as ID of medium, newspaper section, headline (M1); three variables concerning the visual level (M2); six topical specifications (M3); and nine variables to determine bias of the coverage (M4). Through a pretest of four articles per medium, we verified the codebook's quality and the coder's accuracy. The first test run resulted in an intercoder reliability of 0.74, which required a revision of the codebook and further instruction of our three coders, especially in the field of journalistic presentation. Another source of error is attributed to the collecting category "others". By clustering the coded data, we added topical categories, such as food safety and food scandal. A second test run presented an improved intercoder reliability value of 0.88, providing the starting signal for the actual coding.

Since the majority of variables obtain ordinal scale categories, the focus of the data analysis is on descriptive frequency analysis, using the software IBM SPSS Statistics [25]. Lastly, it is important to consider the following language aspects. The coded data of German press messages regarding nutrition corresponds to a distinct set of cultural perspectives and specific terms used by the media. Translating those into English carries the danger of a shift in meaning, wherefore we, in some cases, maintain or include the German word.

## Results

This chapter characterizes the data set's cornerstones, followed by detailed findings. Within the collection of 313 newspapers, we coded 592 nutrition-related articles (♦ Table 1). The average appearance rate found in the German press sample is 1.9 articles per issue. This number has vastly multiplied since the 1990s [12]. Thus, we can claim that nutrition truly is a trending topic in contemporary press. Nutrition coverage is equally distributed among the newspapers, the quality press titles showing a slightly higher appearance. *Süddeutsche Zeitung* leads the sample with 133 articles. *Der Spiegel* contained 101, *Die ZEIT* 95 articles. The regional newspapers' numbers are almost identical: 86 articles in the *Hamburger Allgemeine*, 88 in the *Sächsische Zeitung*, 89 in the *Thüringer Allgemeine*. In six cases, the coding revealed more than 15 articles appearing on the same day, covering either several titles along a similar aspect of nutrition or several topics published in one issue. A closer look at



Fig. 1: *Der Spiegel* Cover, Issue 8/2017, February 18, 2017

Newspaper	Issue count	Article count
<i>Süddeutsche Zeitung</i>	52	133
<i>Der Spiegel</i>	53	101
<i>DIE ZEIT</i>	52	95
<i>Hamburger Abendblatt</i>	52	86
<i>Sächsische Zeitung</i>	52	88
<i>Thüringer Allgemeine</i>	52	89
<b>TOTAL</b>	<b>313</b>	<b>592</b>

Tab. 1: Sample overview

the data accounts for these numbers. One reason is that topics are often featured through several newspaper sections, such as with a lead story on the front cover and a deeper story further on. In one edition of *Thüringer Allgemeine*, the sugar content in soft drinks was discussed in the service section as well as on the children page [26, 27]. Regarding its quantity of reader contribution, *Der Spiegel* stands out, once again, marked by a peak of 34 codings on February 25, 2017. The previous issue had covered a story on meat, featuring the alternative product “impossible meat” (♦ Figure 1). The story received an enormous response from the audience in form of 13 letters to the editor.

Similar headlines published by different newspaper on one particular date often stem from the same news agency reports, one example being global meat production results that appeared concurrently across four newspapers on August 17, 2016. Specifically, the regional newspapers tend to contain a group of holiday-related articles, as did the *Thüringer Allgemeine* and the *Hamburger Abendblatt* around Easter of 2017. However, certain dates resulted in a high occurrence of nutrition-related stories with no clear indication as to why.

### Formal structure of nutrition coverage

In 82.9% of the articles, a direct approach to a specific group of persons was indistinguishable (RQ1a). We collected data concerning different age groups, genders, and groups with special nutritional requirements such as pregnant women, infants, athletes, those suffering from illness, and those wishing for dietary change, none of which could significantly be determined. If coded at all, none of the aforementioned categories surpassed five percent. Daily newspapers had a consistently low focus on schoolchildren and adolescents (4.7%).

The topic nutrition appears in every newspaper section across the sample (RQ1b). The top three results include the business (“Wirtschaft”) (18.2%), advice (“Ratgeber”) (14.7%), and science sections (“Wissenschaft”) (14%).

♦ Figure 2 displays the topic’s frequency in each title. We exclude sections with an overall total lower than two percent (feature, page 3, sports, media, literature, other).

Business-framed articles are dominant across all publications observed. Pursuant to their circulation area, *Thüringer Allgemeine* and *Sächsische Zeitung* present nutritional news with an emphasis on local and regional implications. With these, and in *Süddeutsche Zeitung*, the category advice proves to be a sweeping pool of nutritional coverage. Under advice, we sub-

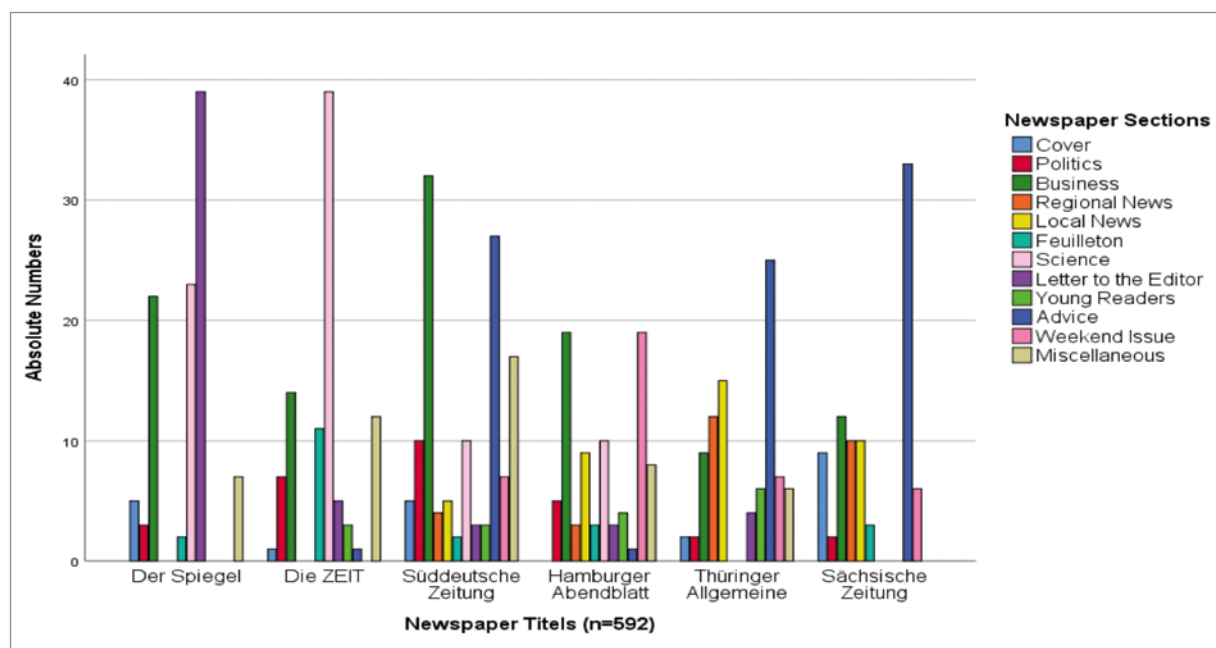


Fig. 2: Nutrition in newspaper sections per medium



sume articles addressing lifestyle, health, cooking, travel, carrier, events etc. *Hamburger Abendblatt* stands out in its most frequent section for nutritional topics, the weekend issue column “dinner is served” (“*Zu Tisch*”) (22.1%). *DIE ZEIT* strongly shows a strong science journalism performance in the realm of nutrition (41%). The analysis presents 3.7% of cover stories relating to nutrition. None of the cover stories were found to correspond with specific dates or topics, nevertheless, three publications stand out with more cover stories: *Sächsische Zeitung* (9/22), *Süddeutsche Zeitung*, and *Der Spiegel* (each 5/22). ♦ Figure 2 shows the aforementioned high volume of letters to the editor in *Der Spiegel* (39/101).

All ten codebook categories relating to the variable form of journalistic presentation were used to report on nutrition (RQ1c). However, 50% appeared as a classic news story. We identified a rate of 13.3% feature stories, and 9.3% opinion pieces. The data contains five cases of image report, which refers to depiction of fact-based information without further contextual explanation. One example is the series of pie charts the “pie of the truth” (“*Torte der Wahrheit*”) in *DIE ZEIT* illustrating data on food scandals (February 9, 2017). In 65%, one type of visualization was included as part of the article, mainly in form of a photograph (56.2%) (RQ1d). This result can be more easily distinguished between stock footage (8.8%) and a unique photograph of the covered event (91.2%). Findings concerning nutrition-related graphs, caricatures, logos, info boxes, and drawings were lower than 5%. We determined a second visual in 24.3% of the articles and a third in 13.2%, one of which was most often a portrait of the author. Visuals appear in news stories, features, opinion articles, and interviews.

### Characteristics of Nutritional Content

In 86.3% of articles, nutrition is identified the main topic (RQ2a). Article covering restaurant visits (5.8%), consumption (5.2%), cooking (5.1%), diseases (5.1%) and food production/animal husbandry (5.1%) and proper diet (4.9%) lead the higher end of main topics. Due to the heterogenous nature of the coverage, the results of overall topic categories present a slightly different picture:

- i. production (31.3%)
- ii. nutritional trends (25.8%)
- iii. food (14.9%)
- iv. health (14.5%)
- v. shopping (10%)
- vi. seasonal events (3.5%)

Here, the most prominent overall topic appears to be production, which includes all forms of agriculture and farming, labels of origin and quality as well as food production. The second category, nutritional trends, subsumes eating at restaurants and catering services as well as different diets (proper/improper/vegan etc.). The range of main topics coincides with the eliminated newspaper sections, in which topic specific aspects of nutrition are discussed (advice: cooking, science: diseases, business: food production and consumption). The topic consumption has also sparked writers of letters to the editor. On the basis of a summary for each

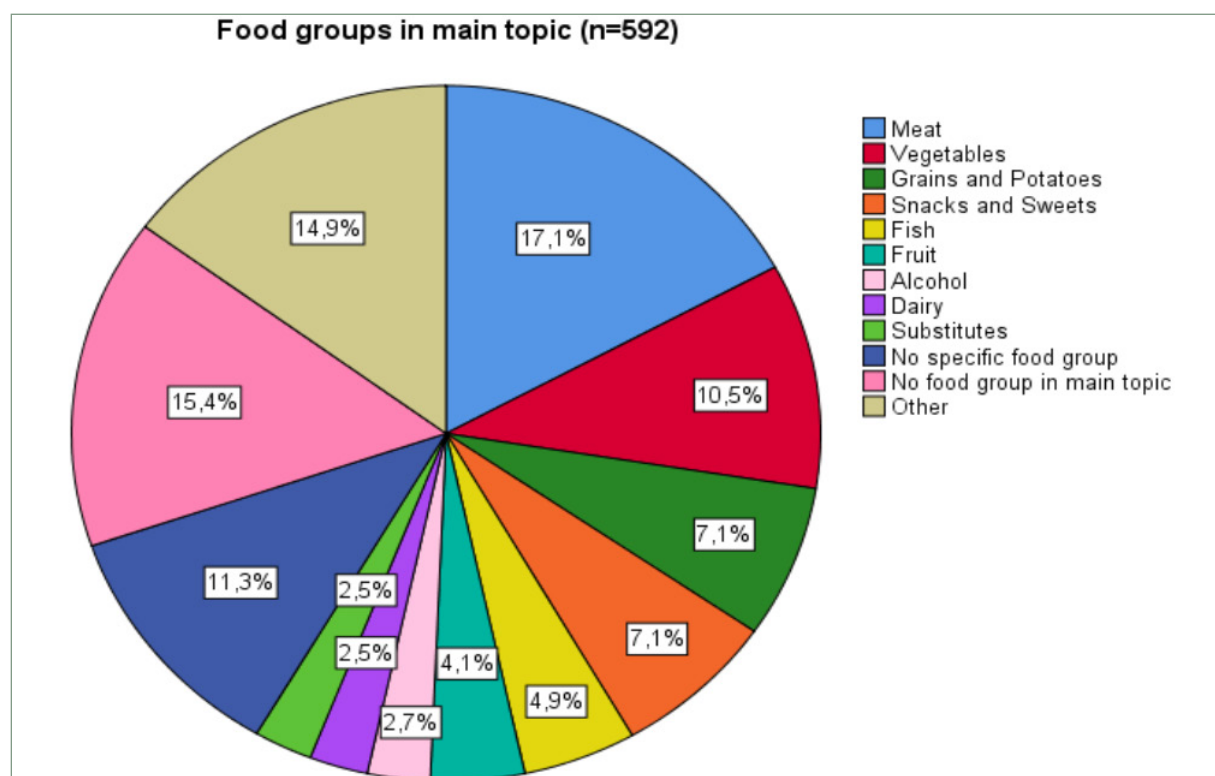


Fig. 3: Frequency of food groups





### Bias in Nutrition Coverage

The content analysis could not expose a general evaluative tone towards single food items (RQ4a). The sample includes small numbers of positively, negatively or neutrally portrayed foods. Of all articles mentioning foods or food groups, meat ranks first (negative 9.6%, neutral 8.8%, positive 6.8%), followed by vegetables (positive 7.4%, neutral 5.5%, negative 2.2%). A similar evaluation shows the category sweets (negative 6.6%, positive 4.4%, and neutral 3.7%).

Key messages regarding nutritional recommendations, consumer protection and behavior, food processing or cultural traditions can be eliminated in 86.7% (n=513) of the articles (RQ4b). Supportive restaurant and cookbook reviews, articles promoting “healthy” (“gesunde”), “easy” (“einfache”) or “favorite” (“Lieblingsrezepte”) recipes “to cook yourself” (“zum selber Kochen”), as well as exemplary insights into the vegan lifestyle comprise the category recommendations with a positive tendency (21.2%).

The data shows an even distribution in the general occurrence of key messages across the newspapers. Reports on food processing technologies are negatively framed in 49 of 133 cases, 48 are neutrally covered. *DIE ZEIT* is marginally dominant in this category, which remains the only noticeable distinction. Instead of focusing on the evaluation of certain aspects of the coverage, ♦ Figure 6 assesses the overall tone of each newspaper. We distinguish a scale of five categories, ranging from explicitly pessimistic to explicitly optimistic. In 39.8% of the cases, the ranking was not applicable, as they contained neither optimistic nor pessimistic aspects (RQ4c). A notably optimistic tendency in nutrition-related coverage is examined in *Süddeutsche Zeitung* (6.7%), which corresponds with other research results. In reference to the broader topic of science coverage, Elmer et al. [13] present an impressive 54% of articles in *Süddeutsche Zeitung* as having a positive evaluative tone. The news magazine *Der Spiegel* is determined to hold the highest value in balanced coverage (5.6%). These results affirm the

news-centered nature of coverage. More than half of the examined coverage consists of factual journalism (66.1%).

### Conclusion

Along the lines of the study’s entitlement, we eliminated content and formal specifics that constitute nutrition-related coverage in German press. However, the diverse nature of the pervasive society topic “nutrition” is similarly reflected by our sample. The content analysis of six German newspaper titles over a period of twelve months reveals a vast increase of almost eight times the average rate for daily nutrition coverage than was the case in the mid-1990s [12].

The topic permeates all newspaper sections, with a high concentration on service predominantly in regional press and economic aspects. The study exposes a wide range of journalistic presentation forms headed by fact-based news stories. It cannot be asserted that the coverage either addresses a specific readership group or focus on significant actors. Articles repeatedly reference schoolchildren, but once again, the results show a strong heterogeneity (A1).

Of all food items examined within German nutrition coverage, meat is the key term by 17.1% (A2). Contrary to our previous expectation, the data shows political players to be

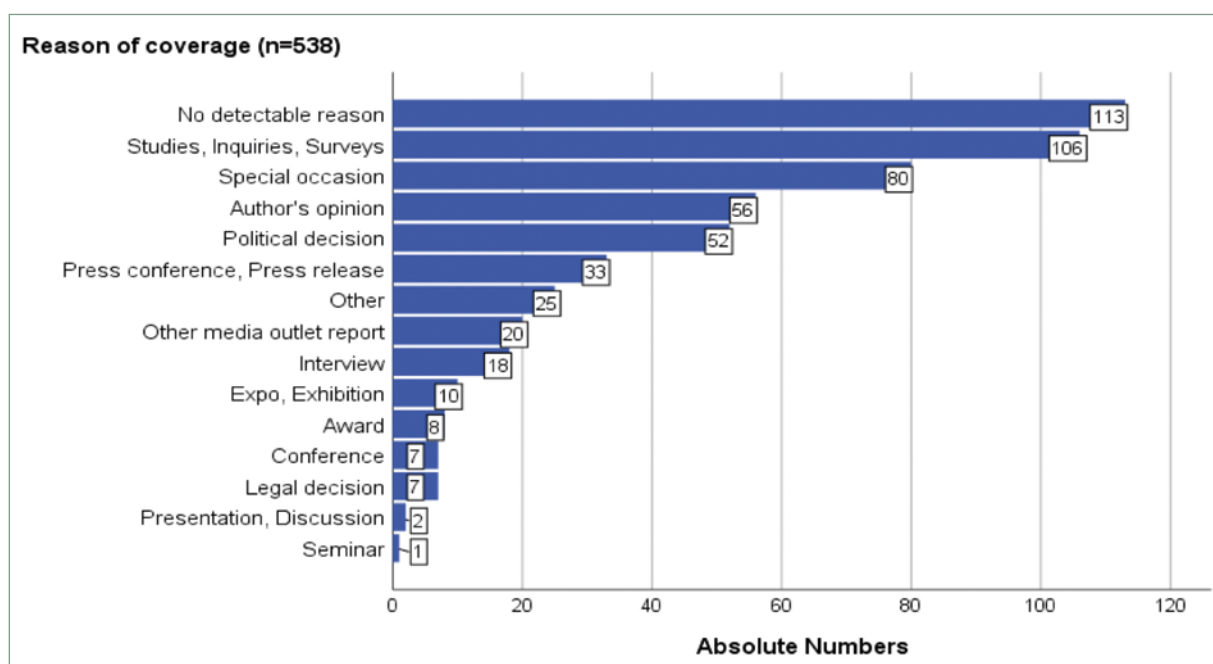


Fig. 5: Reason of coverage

significantly underrepresented. Rather, players from the primary economic sector, animal husbandry and the food production industry dominate the sample. Additionally, actors from the scientific community appear as a steady source for nutritional messages, especially in national press (A3).

Overall, the researched nutrition coverage is well-balanced and fact-based. A similar picture can be drawn concerning the connotation of specific food groups. We isolated negative reports on meat, those regarding food safety issues and animal cruelty, in *Der Spiegel* (14/44), *DIE ZEIT* (9/44), and *Hamburger Abendblatt* (4/44). One article even draws attention to such problems in ecological animal husbandry [30]. Thus, considering the low case numbers, there is no proof for a general emphasis or endorsement on reducing meat consumption (A4).

## Limitations and Discussion

The quantitative content analysis proved to be effective for our task. Yet, its limits lie in assessing aspects that are missing from the material, those which have the potential to systematically unravel quality differences between articles. As in one case from *Thüringer Allgemeine*, entitled “Pears and Broccoli: Better than Medication” [31], fails to even address the specific foods mentioned in the headline or

discuss their effects on the human body. This article indicates the trivial tendency of reporting presumably caused by a lack of expertise and time especially in local and regional newspapers.

A three-year gap exists between the data collection and the analysis, which presents the possibility of changes to the nutrition journalism landscape. Particular political changes, including the launch of the reduction strategy in attempt to reduce fat, salt and sugar in industrially produced foods by the Federal Ministry of Nutrition and Agriculture in 2019 and the beforementioned introduction of the Nutri-Score to the German market in 2020, shape the public discourse. We suspect these measures may have amplified the nutrition-related coverage in Germany regarding the appearance of political players. During the COVID-19 pandemic, the altercation over meat consumption in German media might expand our results on the coverage’s evaluative tone. The codebook was not developed to identify messages regarding specific meats, such as beef, pork and poultry, which is unfortunate bearing in mind the dominance of the topic. The differentiated categories certainly contributed to the diversity of results and might have led to coding mistakes. However, the potential impact such errors may have on the research’s general conclusion is limited.

We are fully aware that the messages exerted by the press coverage are not an isolated occurrence, but are woven into a dense net of nutrition-related messages from other print outlets such as magazines, in which the food segment has become a big seller repeatedly in special issue and gender-specific magazine titles. Nutrition-related information gathered online are particularly susceptible to mislead the reader. The quality monitoring project „The Nutrition News Review“ aims at endorsing awareness among journalists publishing in the fast-paced online media [32]. Along the lines of health promotion, nutrition knowledge from media is an integral component of nutrition literacy or more broadly put of food literacy [33, 34]. Public health authorities face an urgent need for further and more comprehensive nutrition

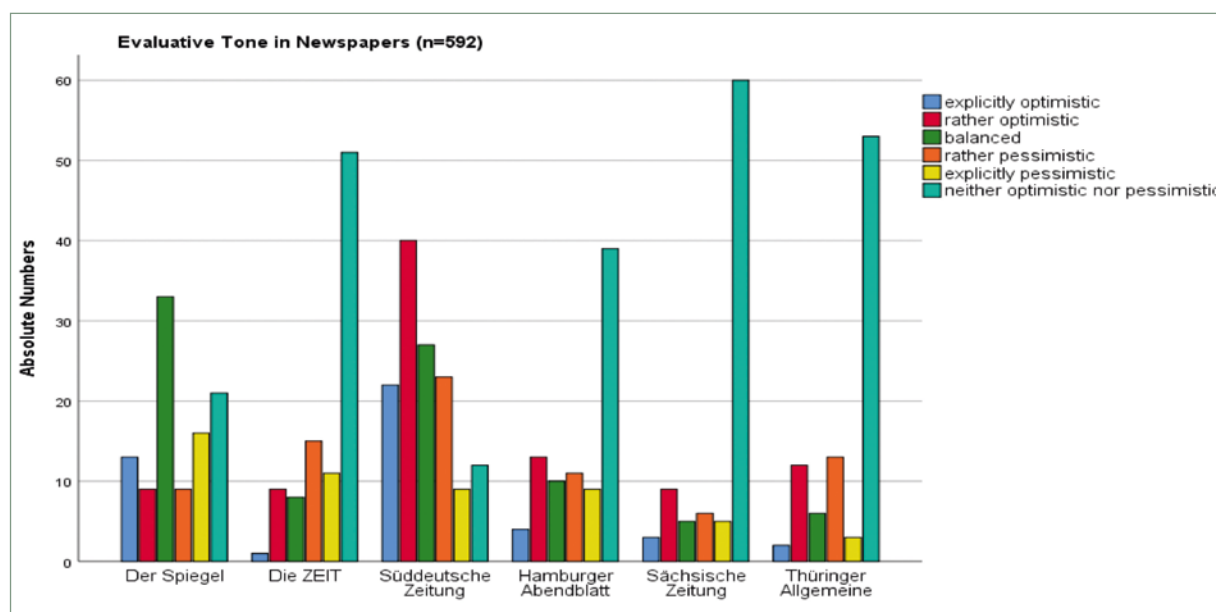


Fig. 6: Evaluative tone in newspapers





communication research. Disregarding the intermediary effects of any form of nutrition-related reporting among competence assessment studies is simply unwarranted [35]. Therefore, we plead for a stronger focus on research in the field of nutrition communication. With the aim of a basic analysis of the status quo of nutrition-related coverage in Germany, this is the first of several studies within the joint project “Competence Cluster for Nutrition and Cardiovascular Health”. As one of many, this content analysis will be followed by a nutrition journalist survey, investigating participant’s professional self-perception and workflows.

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**Conflict of Interest**

The authors declare no conflict of interest.

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