

Communication on healthy diet and weight loss in food blogs and other social media

A systematic review

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Summary

This systematic review examines communication on nutrition in social media. The aim of the study was to identify essential communicated contents and communication structures. Nine databases were used and eleven studies were found to be relevant. For this publication two issues were selected: Communication on “healthy diet” was characterized mainly by rigid dietary requirements and their strict implementation, whereas the social networks on “overweight and losing weight” were especially characterized by social support. The identified communication structures included democratization of nutritional knowledge and thus a strong influence on the expert-layman-relationship. Organizations and experts are called upon to become more involved and should play more of a supporting role. For this, social-media-trainings for experts and more research is needed.

Keywords: social media, nutrition, food blogs, healthy diet, overweight, weight loss, communication

dingly, for Nutrition and Health Science the way people communicate regarding nutrition is changing.

Objective

This systematic review uses study research to examine what scientific studies currently exist that deal with communication on nutrition in social media.

This study has two objectives:

1. **What is the content of communication on nutrition and health in social media?**
2. **How does communication work?** With this objective in mind, communication structures were investigated, for example: Is this communication structured hierarchically or not?

Methods

The study research was carried out according to the „Handbook for Systematic Reviews“ by the University of Applied Sciences Fulda [11]. In the first step a list of relevant keywords for the study research was made (♦ Overview 2). The selection was based on the terms used in the relevant literature (see: References). A list of all used terms for the field of social media was compiled at first. As for the term „nutrition communication“ (in German: *Ernährungskommunikation*) there is no accurate translation into English,

Introduction

The internet is an integral part of today's media landscape. While in 2000 28.6% of the German population from the age of 14 years used the internet occasionally, by the end of 2014 their percentage had risen to 79.1% [1]. This also increased the use of social media¹ (♦ Overview 1). Among 14- to 29-year-old internet users, almost everybody (90%) has an account in one or more social networks [2]. Facebook alone is used in Germany by 19 million people every day. Thus, Facebook reaches more people than the three largest daily newspapers in Germany taken together [3].

The production of content and interaction, based on a self-organized, non-hierarchical operation is typical of social media [4]. Accord-

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Definition

A short and precise definition of social media does not exist yet. However, the term can be described. Social media (social web) are internet-based applications, not with a priority to provide data but to connect people. Since these media complement and enhance the traditional online offer of data provision, they are also called web 2.0. Social media are supposed to support people in sharing information, building relationships and communication as well as collaborative cooperation [5].

This is just a rough outline, since there is also communication via e-mail, and also books facilitate the exchange of information. Finally, all media have a social aspect, be it an online article or an antique painting. Social media are very special due to the fact that they are based on common use; they only exist because we use them [6].

The extent of participation diverges here. The success of the online store Amazon, for example, is based on a vast data base created by a huge number of users, e.g. by rating products and writing reviews about them. Here, participation is initially restricted by adding their own content to an existing online offer. In contrast, websites can be exclusively user-generated, the most famous example being the online encyclopedia Wikipedia. All in all, web 2.0 offers great opportunities. They include online communities for a broad variety of topics, video, photo or music portals, file sharing (legal and illegal) for information and goods, text networks of blogs and microblogs (defined below) or wikis to share knowledge [6].

Manifestations

Since social media is oriented towards the interactional needs of people, a social media application exists for virtually almost any aspect of life. The variety is almost overwhelming. One can categorize the options according to their technical structure, for example according to EBERSBACH et al. [5]:

- **Wikis** enable the collaborative creation of texts. The knowledge of the community is accumulated; the individual author fades into the background.
Example: Wikipedia
- **Blogs** (abbr. for weblogs) are journals in which personal experiences or reports on current topics are published. In the food sector there are blogs about e.g. vegetarian diet, weight-loss, restaurants and more. The authors, even if they remain anonymous, are the focus. By linking content-related blogs and their readers, a community forms.
Example: food blogs
- **Microblogs**: only short reports are published here, immediacy is of primary importance.
Example: Twitter
- **Social networks** are online networks in which contacts can be established or maintained. They are available for many different groups and for any purpose: professional contacts, students, neighbors.
Example: Facebook
- **Social sharing platforms** are used for exchanging digital data, such as videos, images or links. Providing, organizing and categorizing large amount of data is at the forefront.
Example: YouTube

Use in numbers

Since the internet is largely self-managing and the companies themselves publish rather limited data, it is difficult to examine the exact current number of social media users. As an example nonetheless some numbers should be listed. Wikipedia can for example be used for nutritional information. Thus, in November 2015 the German article on „cholesterol“ was read 22,428 times [7], the article on „body mass index“ was read 32,330 times [8]. An accurate count of active blogs is barely manageable. German Food Blogs, a platform for German food blogs, is in contact with more than 1 000 German food blogs, according to their own statements [9]. Among social networks Facebook is by far the most frequently used in Germany. According to the market research company comScore 38.6 million users on Facebook were active in December 2012, followed by Google Plus (5.6 million subscribers), Xing (4.2 million), StayFriends (3.5 million) and Twitter (3.1 million) [10].

several adequate terms were used and additionally a list for the general area of nutrition was created. All terms have been matched with the keyword catalogs of the database used for the search and possibly complemented. Considering the social- and media-scientific orientation of the research questions also databases of the social, media and communication sciences were used to find scientific publications in addition to the major databases of nutrition (only partly integrated into Web of Science). The hereby found publications (n = 487) were filtered based on the title according to the following inclusion and exclusion criteria. In the case of ambiguous titles, the abstract was used.

Inclusion and exclusion criteria:

- solely studies or reviews, since the state of research is to be determined by scientific publications (books, websites or journalistic articles were excluded)
- only publications of the last five years (2008–2012) because of the rapid pace of change, social media requires a certain timeliness
- only diet of people which is not specified for a certain disease (obesity excluded), with ordinary food

- explicitly social media; excluded were those studies on eHealth, in which no social media applications were used, because the focus was not on the internet in general, but on social media.
 - only English or German publications
- These criteria resulted in a list of articles that could potentially be included for the research questions (n = 30). The entire text was filtered again according to the inclusion and exclusion criteria. According to this step further articles could be excluded (n = 21; ♦ Figure 1). All other articles were relevant to the inclusion and exclusion criteria (n = 9). For further research the references of the studies were examined for additional studies. Thus, another article could be included. An additional item was included on free research.
- ♦ Figure 1 shows the databases and an overview of the search history.
- Due to the broad scope of the studies, the analysis of the study content focused on two research questions: the communicated content (what is communicated?) and the communication structures (how is communication organized?). The analyzed data were categorized.

Results

Study characteristics

Eleven publications were included, one of them (SIMUNANIEMI 2011) includes two studies that are cited separately below. The publications reported partly significant differences with regard to:

- the edited food topics, focusing on the subjects’ weight loss/obesity (n = 4) and healthy diet (n = 3),
- the research method, whereas most (n = 8) chose a qualitative research approach,
- the examined social media applications, whereas most investigated (n = 8) blogs.

An overview of the different characteristics of the included studies is listed in ♦ Table 1². The result of the study research already shows that at the time of research, the field of social media was only little investigated, since only eleven studies were eligible for inclusion. With regard to the small number, this review does not claim to be representative, for example concerning the nutrition issues negotiated in social media or the most frequently used applications. The studies allow only an exploratory insight into the research field.

What is communicated?

The included studies were grouped into the following main topics (♦ Table 1²). The choice of categories of data evaluation was made inductively, based on the title.

- **healthy diet:** dealing with „healthy“ diet – according to an individual definition of social media users
- **overweight and weight loss:** how obesity and overweight can be reduced
- **natural diet:** dealing with a diet that is as natural as possible for humans

OVERVIEW 2: SEARCH KEYWORDS		
Social Media	Food Communication	Nutrition and Food
Social Media	Food Communication	Nutrition
Web 2.0	Nourishing Communication	Nutritional Behavior
Blog, Blogging	Nutrition Communication	Nutritional Patterns
Microblog	Diet Communication	Eat, Eating
E-Health, eHealth		Eating Behavior
Twitter		Eating Habits
Facebook		Food
YouTube		Food Choices
		Food Habits
		Diet
		Dietary Behavior
		Food Literacy

² ♦ Table 1 of this article can be found in the online version of issue 4/2016:
→ www.ernaehrungs-umschau.de

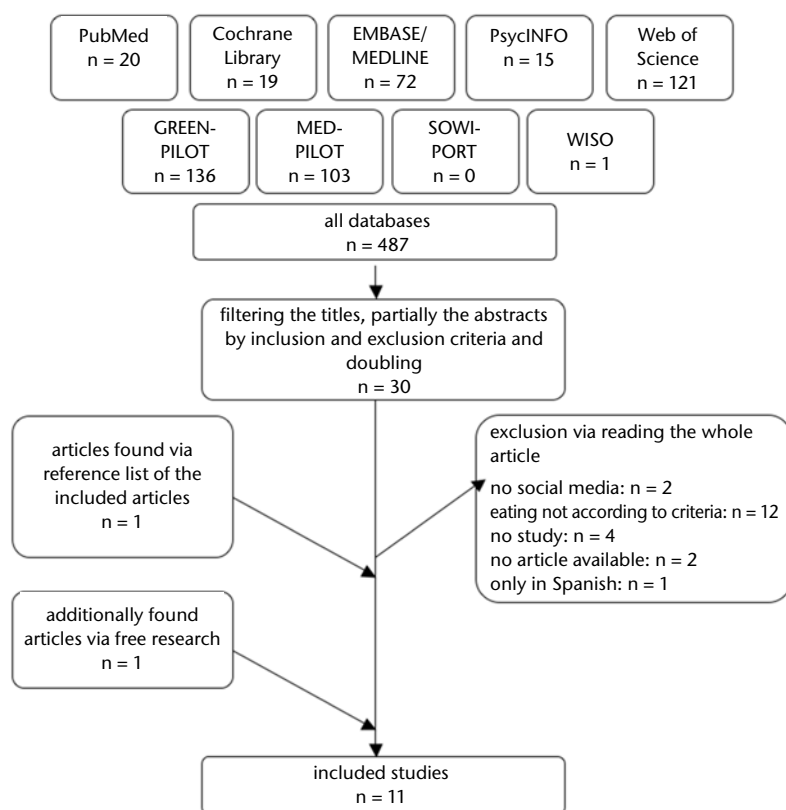


Fig. 1: Flowchart on the systematic literature search

- **altruistic diet:** dealing with a diet that is designed to damage the natural environment the least, usually in the form of emission reduction
- **phenomenon „foodies“:** foodie movement; pleasure and food culture are in the foreground.

In the following, the results of the two topics „healthy diet“ and „obesity and weight loss“ are introduced.

Healthy diet

LYNCH reported very specific, strict conventions of a healthy diet in both of her studies [12, 13]. These included rigidly defined dietary rules and special food with a high nutritional value. All bloggers wrote that nutrition has a high priority for them, which showed in their spending a lot of time e.g. to plan their next meal, to go shopping for food or to learn about food. Some of them are described as being “ob-

essed” by relatives or friends [13]. The dishes which were presented in social media, according to LYNCH, are mainly vegetarian or vegan. The food consisted almost exclusively of whole meal products, fruits, vegetables and low-fat dairy products. The ingredients are mostly organic and locally grown. Sugar is avoided as far as possible. Fast food, deserts, greasy or highly processed food was shown to be very rare. In addition, avoiding trans-fats [13] was a major issue. SIMUNANIEMI et al. found even rigid behavior: While vegetables are widely accepted as a healthy diet, some fruit is already classified as unhealthy due to its sugar content and even compared to sweets. According to the authors, both bloggers and readers tended to black-and-white-thinking. This expressed itself in the dichotomy between food being either good or bad, for example. In the end, the holistic approach of nutrition was disappearing [14].

LYNCH points out another interesting aspect: Although sweet, fatty food was „forbidden“, healthy dishes were often named like popular fast food dishes, or offered as a substitute, for example „carrot sticks“ as a substitute for fries. Frozen bananas mashed with ice would taste like ice cream, cauliflower titled as popcorn etc. Although some bloggers mentioned how much they love Nutella [hazelnut-chocolate spread], cookies or ice cream, these never featured in pictures in their blogs [13].

Moreover, in her first study LYNCH showed that food blogs promote eating many “filling” meals in small helpings as the basic idea of a healthy diet. Certain foods would only be eaten for being large in volume and low in calories. However, counting calories was said to be unusual. But exact amounts were often indicated, like 25 raisins or ¼ teaspoon of butter [13].

The evaluated studies focused much more on the physiological dimensions of nutrition than on socio-cultural aspects. LYNCH writes that the bloggers described panic if they had to eat outside of their home or were invited to a friend, because they could not ensure that this food was compatible with their guidelines [13]. The bloggers in the sample of SIMUNANIEMI et al. focused particularly on physiological mechanisms and biochemical effects of individual nutrients, for example inulin or fructose and their effect on the metabolism. Food groups or meals were not discussed [14]. In her second study LYNCH describes that related to sports, food intake is often described in mechanical terms: food is called „fuel“ and especially carbohydrates were used to “fuel themselves up” or for being “well-fueled” before exercise. Sports activities allowed the easing of restrictions, i.e. doing additional sports activities make additional meals or food acceptable, which were prohibited in the presentation of the blogger for a healthy diet [12].

The bloggers from LYNCH's study were more dissatisfied in their fundamental attunement. They could not cope with criticism and were strongly critical of themselves. All bloggers of the sample reported binge eating, where bigger or smaller portions of food were consumed that was forbidden by the community. These postings contained only text, no pictures of food. These outbreaks were accompanied by great feelings of guilt, which were compensated by a subsequent „detoxification“ [13].

In addition, SIMUNANIEMI et al. investigated bloggers' behavior concerning official dietary recommendations and nutrition experts and found that this was characterized by mistrust. The bloggers would rather give self-instructions, based on different scientific studies, their own experiences or vicarious experience from hearsay, or something they had read in other blogs or books. However, they promoted a diet, which was fairly close to the official recommendations. Flaunting their specific nutritional knowledge, they demonstrated to readers their superior position of power and expertise. Even if they were not accepted, the official dietary guidelines are very much the subject of discussion. The bloggers were looking for detailed information and justifications for certain recommendations, criticized them or doubted the authority of nutrition experts [14].

Overweight and weight-loss

In contrast to the blogs about „healthy eating“, the blogs on „overweight and weight-loss“ were not so much about energy density and derived dietary rules but about daily life with obesity and discrimination.

YOO and KIM examined content on the video platform YouTube [15]. Obesity was usually presented as a consequence of individual behavior, for example, lack of discipline

rather than social or environmental factors. Junk food and sedentary lifestyle were presented as the main causes of obesity. Therefore most videos suggested behavioral changes e.g. more exercise or healthier diet as a solution for overweight. Overweight people were thought to be responsible for their obesity and the resulting health consequences. 84 of the 417 analyzed videos and almost half of the user-generated videos had teasing of overweight people as a theme. These were seen significantly more often than videos without teasing – some of them were seen more than 9 million times. Overweight people were also usually shown in stereotypical images, e.g. eating fast food [15].

SAVOLAINEN noted that the so-called weight-loss-blogs written by overweight people themselves are more about the emotional support in the blogger community than about nutritional facts [16]. Content-related, bloggers reported most about their dietary achievements, the everyday life of dieting and exercise. Many bloggers described the daily problems associated with being overweight, climbing stairs, for example. In 63% of the 489 examined blogposts, bloggers asked for emotional support and 65% of the 1,117 following comments provided support [16].

TURNER-MCGREEVY and TATE examined the success of online support groups for weight loss and provided one group with podcasts² giving information on losing weight and another group in addition with social support in a Twitter group. Although no significant difference was seen in the weight loss, the podcasts were downloaded more often and the results were documented frequently in the podcast + Twitter group. This group reported that the most important social support was the Twitter group, while the other group ascribed it to their friends [17].

LEGGATT-COOK and CHAMBERLAIN described the social phenomenon of weight-loss-blogs in more detail in their study: as the records of a long process [18]. Often, readers would accompany bloggers along their process of losing weight for years and years. During this period the bloggers experienced a huge change, as for the blogger „Pasta Queen“, for example. While writing her accounts, the blogger lost half of her body weight which meant not only an enormous transformation of her body but also her entire self. She had to learn how to cook, had to try out and like new dishes, to exercise, and to integrate these new activities into her daily routines. During this process of losing weight she changed her clothing style and body image. These changes and problems are documented and discussed in this blog [18].

Discrimination against overweight people was also a relevant issue in the study by LEGGATT-COOK and CHAMBERLAIN. They found that the stigma of obesity is frequently occupied ambivalently in a socio-critical and in a self-critical discourse: On the one hand overweight bloggers would be activists and defend their lifestyle and their overweight bodies enthusiastically. On the other hand they finally wrote a blog about weight-loss and how much they wished for a thinner body [18].

How does communication work?

When new communication technologies are created, also the way in which people communicate with each other changes [6]. Communication mechanisms are diverse and cannot be discussed completely here. This section gives a first impression with a few selected mechanisms that have been identified in the studies.

² Podcasts are regularly published audio-files that can be subscribed by the user.

The following aspects, of which three subsequently are explained briefly, have been described in the studies:

- The community is most important.
- There is no „unlike“-button.
- In social media the users create a (new) self that, in turn, influences their „offline life“.
- The posts of the users are supposed to represent authentic experiences. Everyday knowledge is much more important than expert knowledge.
- The tendency to exhibitionism is fundamental for social media.
- The relationship to other social media users is very intimate and at the same time remains anonymous.
- Discussions are a constructive part of social media.
- Everyone is an expert. The hierarchical relationship between experts and laity becomes obsolete.

The community is most important

All studies included here emphasize the importance of the community in social media. Each study describes the formation of social clusters, depending on an area of common interest, where mutual support and the feeling of belonging to a community are of great importance. SAVOLAINEN explicitly states that communication is not so much focused on getting nutritional information than it is focused on emotional support [16]. COX and BLAKE, however, describe that within a blogger community the relationships among each other can vary: from close friendship and a professional relationship down to rivalry [19]. LYNCH emphasizes that the main motivation to write a blog is to be part of a community that supports one's own diet and lifestyle. Mutual citation, links and comments are generally accepted means of expressing support and strengthening the community [13]. LEGGATT-COOK underlines, however, that this form of encouragement is not the same

for everyone. Some blogs would be read less than others. Sometimes a sudden fluctuation of the readership happens – with considerable consequences for the deflating self-esteem of bloggers receiving less positive feedback [18].

Discussions are a constructive part of social media

All studies considered communicative interaction at the very heart of social media. According to COX and BLAKE, conventions of reciprocity were developed in a blogger community. It was an obligation to respond to links and comments, visit the blog of the commentator and, if possible, also to link to and comment on [19]. SAVOLAINEN worked out that in contrast to public internet forums blogs represent person-centered forums in which the relationship between the actors is more intimate. The bloggers control the discussions and usually select the subject. Blogs are characterized more by a „host-guest“-relationship. Therefore, the tone is more colloquial and friendly than in other social media channels. [16] However, according to LEGGATT-COOK critical or judgmental comments also keep coming up in the discussions. The bloggers therefore often developed strategies to reduce the risk of conflict e.g. by anticipating readers' reactions, by avoiding words with a high potential of conflict or by anticipating counter-arguments [18].

Everyone is an expert. The traditional hierarchical expert laity relationship becomes obsolete

As SIMUNANIEMI et al. show, professional nutritionists were indeed ascribed a formal competence in the examined blogs, but there was less faith in the nutritionists than in those users who write about their own experiences. Thereby bloggers would favor rather an authentic writing style, in contrast to the more impersonal writing style of experts who focus on hard facts [20].

To share knowledge and to learn from others was indeed an important part of the relationship within the communities in social media [13, 21]. But, as SAVOLAINEN points out, in addition to the mere information it is more important to share common knowledge in the form of personal experiences and opinions [16]. According to COX and BLAKE just a few were looking for external, professional information before they wrote something [19]. SIMUNANIEMI et al. found that nutrition instructions by the so called laity could be in conflict with official recommendations. Some official dietary guidelines were criticized and the credibility of nutrition authorities were doubted [20].

Discussion

The topics of „healthy diet“ and „obesity and weight loss“, which have been exemplarily described in detail for the communicated content, initially dealt with similar nutritional issues: how to achieve a healthy, slim body through sports and nutrition. Nevertheless, there are differences between comparing attitudes or relationships to food and the communication about. In the blogs on healthy eating mentioned above, strict dietary rules were propagated and rigid ideas about what a healthy diet should look like prevailed. In this blogger community unhealthy classified food was only consumed in the context of lapses and then usually in large quantities. These bouts were accompanied by feelings of guilt and attempts at compensation. The bloggers thus follow the time-honored long tradition of moralization of food. According to BARLÖSIUS, the morality of food is one of the oldest models of morality. In matters of diet, the notions of „right“ and „wrong“ are thereby constructed and distributed in communicative processes, the breaking of these standards will be

punished socially, with exclusion of the community for example [22].

In contrast to ostracizing, social support was the central motive in the examined networks related to obesity and weight loss as shown above. A less strict social pressure seemed to prevail. SAVOLAINEN reported that members of the blogger community could write about problems, failed attempts to lose weight or lapses in the self-imposed dietary regime and could count on the support and the understanding from the other bloggers [16]. LEGGATT-COOK and CHAMBERLAIN described how successful bloggers kept being supported by their readers over the years struggling to lose weight [18]. Social media could provide a virtual space for monitoring independent of time and space. For obesity interventions these findings could reveal a real opportunity for long-term success, considering that social support plays an important role in processes of change as the brain research by ROTH and STRÜBER has shown [23]. Overall, weight-loss-blogs seemed to offer more opportunities for critical analysis of the topics obesity, nutrition, health behavior and ideal of slimness and their social contexts than the networks for healthy diet. Not being able to meet the nutritional demands and the demands for being slim anyhow, may lead to a critical distance which enables critical reflection of the social context and the question of the normative regulation by society.

As for communication structures, the new media seem to influence behavior and decision-making in daily life considerably, since, according to GIGERENZER, technical development and society always influenced each other mutually [24]. However, consistent communication mechanisms and codes of conduct remained in the investigated blogger communities, such as mutually responding to comments or expressing your support and approval in social groups of an individual's choice. Blogs

only provide a new media forum. According to WOLBER, social media provide a new technology but the underlying motives of social action have therefore not changed [25]. Ultimately, the success of social media is based on a central human need: communication and, derived from it, recognition. Of course, the social web is full of „I am walking the dog now“ messages but so is the “offline world” with a lot of irrelevant information [25]. Also EBERSBACH et al. point out that social networks primarily reflect existing relationships [5].

What actually is redefined and could possibly have an impact on nutrition communication, i.e. the exchange of nutrition-related information in the social discourse, is the role of „experts“. As VOIGT and KREIML have shown, the emergence of social media and the new, self-organized operation have diminished the role of hierarchical structures. Using social media, everyone can publish and participate in discussions. This changes the role of the professional gatekeeper if users do not consider them dispensable anyway in their function [4]. SIMUNANIEMI et al. suggest that experts need to use a language for an effective nutrition-related communication that is geared to the needs of its recipients. Instead of a top-down „authoritarian policy“, experts should play a monitoring role and help consumers to keep track in complex diet discourses [14]. Social media could be a tool to keep in touch with the consumers. SIMUNANIEMI et al. for example made the observation whether it might be useful to offer experts additional training for the use of new media and their language. A possible profession of the future could be the professional food blogger [20], for example.

Ultimately, this study provides only a first overview into the broad field of social media. Further research is needed to confirm these initial observations and assumptions.

Limitations

Concerning the methods: The research about „diet“ and „social media“ was not further specified and therefore led to a broad result of different studies. The keywords could be complemented by the experience of this study.

Concerning the selected studies: In eight of eleven included studies only blogs were examined which do not represent the full range of social media. The results which are presented here are possibly influenced by this special format and do not represent the wide range of other social media. Social media offer such a large data pool that even with the involvement of other formats representative status cannot be claimed. The included studies showed also quite different study designs (♦ Table 1²).

Concerning the application: The studies were from different countries and may represent country-specific observations. Therefore, they are comparable only up to a point. For these reasons, the presented data can only be understood as a summary, one of the first results in a new complex research field.

Conflict of Interest

The author declares that there is no conflict of interest.

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