

Article

The Public's Understanding of Superfoods

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Abstract: The term “superfood” is linked to food that is beneficial to health. However, there is no legal or clear scientific definition, and little is known about individual perceptions of this food group. Therefore, an online survey was conducted ($n = 1006$ respondents) to assess the public's understanding of superfoods in Germany, including (a) the conceptual understanding of the term “superfood”, (b) corresponding consumption behavior, and (c) the risk–benefit appraisal. In total, 70% of respondents were aware of the term “superfood”, and 33% reported consuming superfoods at least once a week. The term was mainly associated with positive food properties, such as “healthy” and “contains vitamins”. Health benefits were rated to be much higher than potential health risks. In addition, imported foods were more likely to be labelled as superfoods, compared to domestic equivalents. In further analyses, we found women, younger people, and organic buyers to have an even more positive impression. That is, specific parts of the population may be particularly attracted to superfood products. Therefore, target-group specific information campaigns can be a useful tool to increase the population's awareness of the potential health risks of superfood consumption and to highlight the presence of equivalent “domestic superfoods” in Germany.

Keywords: superfood; risk perception; risk-benefit appraisal; food consumption; survey study



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1. Introduction

In the last decade, products such as chia seeds and quinoa have experienced an enormous growth in sales in Germany [1]. In marketing and media coverage, these products are often labelled as “superfoods”. However, there is no legal or clear scientific definition of the term superfood yet, and researchers stress that the meaning of the term is predominantly shaped by the marketing industry [2–4]. In the legal sense, foods marketed under this term may represent novel foods in accordance with Regulation (EU) 2015/2283 [5]. However, while chia seeds are classified as a novel food, goji berries and quinoa do not belong to this group [6]. As a result, there are neither guidelines for classifying foods as superfoods, nor is there a comprehensible overview of such a classification available. The Oxford English Dictionary defines the term as “a food considered especially nutritious or otherwise beneficial to health and well-being” [7].

Indeed, for many foods that usually are labelled as superfoods, studies showed potential benefits for human health [8]. For example, an intervention study by Onneken showed that the daily consumption of a small amount of chia seeds might have a positive influence on cognitive abilities in adults [9]. Typically, benefits of superfoods arise from their nutritional profile, including a high content of vitamins, minerals, or antioxidants [10]. For instance, chia seeds are a source of Omega-3 fatty acids, and quinoa was found to be a source of all nine essential amino acids [11,12]. It is noteworthy, however, that the actual quality and chemical composition of foods are influenced by a number of factors, such as the growing location or the sowing date [13,14].

Even though the potential health benefits may predominate in the scientific literature, there are also reports of potential health risks when consuming superfoods. Accordingly, superfoods can have an inherent allergic potential to which some people are susceptible,

and they can contain contaminants [15–19]. For example, in a study by Mesías et al., the addition of chia flour to baking biscuits resulted in improved nutritional properties but also increased the content of process contaminants, such as acrylamide [20].

Another important aspect is the fact that the topic of superfood is also highly connected with the topic of sustainability. Sustainability is usually conceptualized including the dimensions of environmental, social, and economic sustainability [21,22]. Global superfood consumption is known to have an impact on these dimensions. If consumption rates continue to increase on a global level, the environment can suffer due to land clearing and the use of agrochemicals, and, on a social level, the associated profit orientation can lead to financial problems for the farmers [23]. In Peru, for example, increasing international demand for quinoa has led to an increase in the area of quinoa cultivation as well as increased competition for land use [24].

In sum, there are several studies investigating the influence of food usually labelled as superfood on human health and global sustainability. However, little is known about the perception of this food group. There are studies showing that consumers prefer food with superfood ingredients and that the perceived relative advantage compared to “ordinary” food is important for that preference [25,26]. Other studies have revealed various consumer segments when it comes to superfood perception and showed that consumers are willing to pay a premium for superfood [27,28]. However, it remains unclear what consumers think of when hearing about superfoods, and to what type of food they think this term is referring. As there is a lack of a clear definition of superfood, and the term itself is mainly shaped by marketing and media, such insights into the public’s understanding of the term are helpful to systematically clear up the confusion when using this term.

Following these considerations, the present study aimed to assess the public’s understanding of superfoods in Germany. By using a representative online survey method, three main areas were explored: the conceptual understanding of the term “superfood”, consumption behavior, and risk–benefit appraisal. More specifically, the study aimed to assess whether the general public has heard of the term superfood, what properties they think superfood products have, which specific food products they would call a superfood, and how they rate the potential health benefits versus risks. Furthermore, the consumption frequency and reasons for consumption versus non-consumption were assessed. Using this approach, the present study is the first one, to our knowledge, to systematically test the public’s understanding of superfoods.

In general, food preferences and choices are based on a complex process and can be influenced by diverse factors, including physiological, situational, sociocultural, and psychological, as well as extrinsic product characteristics [29]. Moreover, individuals differ systematically in the way they process information about food products, such as packaging and labelling of products [30]. Therefore, people who particularly value health claims or care about a conscious diet may be more attracted to products that are labelled as superfoods. In addition, explicit and implicit gender norms can drive eating behavior, with women being more exposed to gender-specific advertisements, expected body discipline, and dietary self-control, in contrast to men [3]. Thus, superfood products may be more appealing to women than men. Lastly, as the term superfood is shaped by the marketing industry, the media channels used may be more accessible and appealing to different age groups [31]. For promoting superfood products, diverse channels are used, and social media platforms seem to be particularly important [32]. Therefore, differences in the understanding of the term superfood based on sex and dietary style, as well as correlations with age, were analyzed in this study.

In the following, an overview of the materials and methods is given, including a description of the study participants, the study design, and the statistical analyses. Then, the study results on the conceptual understanding of the term “superfood”, on consumption behavior, and on risk–benefit appraisal are presented. Finally, the results are summarized and discussed, the limitations of the study are elaborated, and conclusions for future research are drawn.

2. Materials and Methods

2.1. Participants

In total, $n = 1006$ respondents were recruited from Kantar's German online access panel [33]. The sample was drawn randomly with representative quota control according to sex, age, education, and region. To further increase sample representativeness, data were statistically weighted according to sex, education, age, employment, size of city, and German federal state. As a result, distribution of sociodemographic variables in the weighted sample was representative for the population in Germany with a mean age of $M = 48.2$ years ($SD = 18.2$, range 14–87 years) and an equal sex ratio (50.7% females, 49.3% males). The market research institute Kantar GmbH was commissioned for data collection.

2.2. Study Design

Study participants responded to an online survey. Online surveys face a number of strengths and weaknesses [34,35]. Strengths include the controlled sampling and the flexibility in question designs, while weaknesses include a poor response rate and the requirement for the respondents to have online expertise. Thus, the choice for a method should be based on methodological requirements of a given study design. For the present study, an online method was chosen in order to avoid verbal misunderstandings resulting from other methods (e.g., via telephone) and to include photos of superfood products for visual support. Response to each individual question was voluntary, that is respondents were always given the opportunity to select the response option "don't know/no answer". On average, the survey duration was 4 min and 13 s (median).

The questionnaire started with sociodemographic questions that were required for the representative quota control (sex, age, education, and region). Subsequently, three major topics were addressed in the following order: the conceptual understanding of the term "superfood", the corresponding consumption behavior, as well as the risk–benefit appraisal of superfoods. The questionnaire ended with a question about the respondent's dietary style as well as further sociodemographic questions (e.g., employment).

For the conceptual understanding of the term "superfood", respondents were asked first whether they had already heard of certain foods being referred to as superfood (yes vs. no). Those, who had heard of this term, were further asked, what they think were typical properties of such foods (open-ended question). In addition, they were given a list of six foods and were asked, whether they would call this food a superfood or not (labelling test). The food list contained pairs of food that were similar in their nutritional profile [36] but differed in their cultivation in Germany (usually imported vs. domestic foods). The food pairs included chia seeds and linseed (e.g., high content of omega-3 fatty acids), goji berries and blackcurrants (e.g., high content of vitamin C), and quinoa and oats (e.g., high content of iron). In previous studies, all of these foods showed potential benefits for human health [9,12,37–40]. The foods were presented in random order and with a standardized photo for visual support (for an example, see Figure 1).



Figure 1. Photos used in the survey to present goji berries (left) and blackcurrants (right).

For the corresponding consumption behavior, first, all respondents were given a formalized definition of superfood to ensure all respondents had a similar mental representation of this term (see Table 1). Subsequently, they were asked how often they recently have eaten such food with the response options “every day”, “several times a week”, “about once a week”, “about once to three times a month”, “less than once a month”, and “not at all”. Respondents reporting to eat superfoods (i.e., at least “less than one a month”) were further asked to name reasons for their consumption (open-ended question). Similarly, respondents reporting not to eat superfoods (i.e., “not at all”) were further asked to name reasons for their non-consumption (open-ended question).

Table 1. Definition of the term “superfood” given to the respondents.

	Definition
Superfood	The term “superfood” is often used to describe foods that are considered to be particularly beneficial to human health because they are said to contain high contents of nutrients – for example, a high content of vitamins, antioxidants, proteins, minerals, or fiber. Exotic foods in particular are referred to as superfoods. Typical examples of superfood are: chia seeds, quinoa, goji berries, matcha tea, and avocado.

For the risk–benefit appraisal of superfoods, respondents were asked to rate the health risks and health benefits of superfoods using a response scale of 1 (very low) to 5 (very high). If a respondent rated an aspect to be at least moderate (i.e., 3 on the scale), he or she was asked to name explicit health benefits or health risks of these foods, respectively (open-ended questions).

For grouping respondents according to their dietary style, they were asked at the end of the questionnaire, whether they regularly buy organic products (yes vs. no). In the following, those reporting to buy organic products will be called “organic buyers”, and those not buying these products will be called “non-organic buyers”.

2.3. Statistical Analysis

Data were processed and analyzed using SPSS (Version 26). All analyses were based on the weighted sample (see Participants). In addition to descriptive analyses, differences were analyzed for sex (female vs. male) and dietary style (organic buyers vs. non-organic buyers) using the Rao-Scott adjustment for complex survey data [41]. For age, correlational analyses for weighted samples were performed using R (Version 4.0.3) and the *jtools* package (Version 2.1.4) [42]. Corresponding effect sizes were calculated for each significant difference and correlation, and common thresholds for interpretation were used [43], as shown in Table 2.

Table 2. Interpretation of used effect sizes.

	Small Effect	Medium Effect	Large Effect
Cohen’s <i>d</i>	0.20	0.50	0.80
Pearson’s <i>r</i>	0.10	0.30	0.50
Cramer’s <i>V</i>	0.10	0.30	0.50

Note. Rules of thumb for interpretation of effect sizes based on Cohen (1988) [43].

For open-ended questions, responses were coded. The utilized code frames were developed based on the answers within an inductive process. As respondents were not limited by the length of their response, one response may fall into more than one category.

3. Results

3.1. Conceptual Understanding of the Term “Superfood”

3.1.1. Awareness of the Term

70% of respondents stated that they had already heard of the term “superfood” (see Figure 2), while 26% had never heard of it. Four percent did not respond to this question. Further analyses showed that women, compared to men, were more likely to be aware of this term ($F[1,1005] = 10.38$, $V = 0.12$, $p = 0.001$), as were organic buyers compared to non-organic buyers ($F[1,1005] = 50.74$, $V = 0.27$, $p < 0.001$). Further, correlational analysis for age showed that the younger the respondents, the more likely they were to be aware of the term ($r = -0.07$, $p = 0.03$).

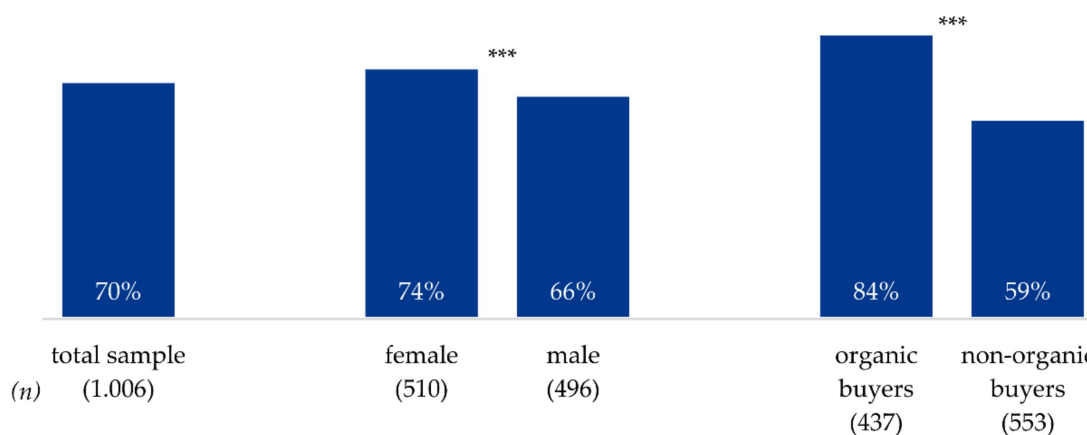


Figure 2. Awareness of the term “superfood” by total sample, sex, and dietary style. Note. *** $p < 0.001$.

3.1.2. Associated Properties

Of those who were aware of the term superfood ($n = 707$), about one third (32%) did not associate any specific property with this term. The most associated property was “healthy” (37%), followed by “contains vitamins” (17%). Other properties were mentioned just occasionally, including “contains nutrients”, “contains proteins”, “natural, organic, or no additives”, “gives energy”, and “low caloric” (each $\leq 6\%$). Further analyses for most associated properties showed that women, compared to men, associated the properties “healthy” and “contains vitamins” more frequently (healthy: 43% vs. 30%, contains vitamins: 20% vs. 13%; $F_s[1,1005] \geq 4.84$, $V_s \geq 0.09$, $p_s \leq 0.03$). Moreover, organic buyers, compared to non-organic buyers, associated the property “healthy” more frequently (43% vs. 31%; $F[1,1005] = 7.76$, $V = 0.12$, $p = 0.01$). This property was also mentioned more frequently the younger the respondents were ($r = -0.19$, $p < 0.001$).

3.1.3. Labelling Test

Those who were aware of the term superfood ($n = 707$), labelled foods that were usually imported to Germany (chia seeds, goji berries, and quinoa) significantly more often as superfoods than their domestic counterparts (linseeds, blackcurrants, and oats; $t_s[731] \geq 6.24$, $d_s \geq 0.33$, $p_s < 0.001$; see Figure 3). With the exception of blackcurrants, women, compared to men, were more likely to label a given food as superfood ($F_s[1,1005] \geq 3.93$, $V_s \geq 0.08$, $p_s \leq 0.05$). Organic buyers, compared to non-organic buyers, were more likely to label chia seeds, linseeds, quinoa, and goji berries as superfood ($F_s[1,1005] \geq 4.34$, $V_s \geq 0.09$, $p_s \leq 0.04$). For age, the younger the respondents, the more likely they were to label chia seeds and linseeds as superfood ($r_s = -0.11$, $p_s \leq 0.01$).

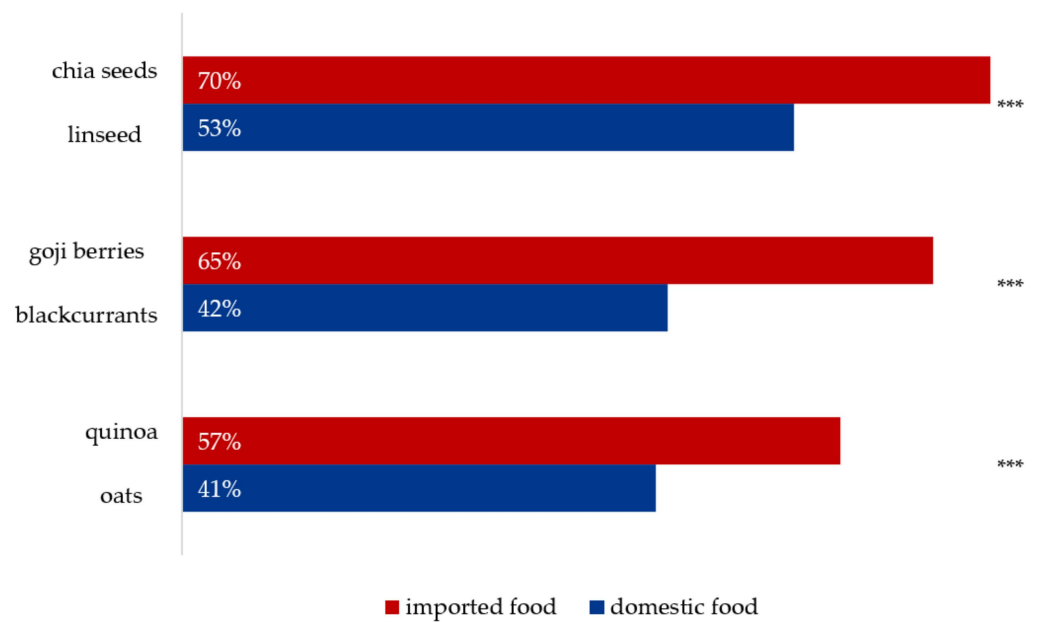


Figure 3. Labelling of imported versus domestic food as “superfood”. Note. *** $p < 0.001$; $n = 707$ respondents who were aware of the term superfood.

3.2. Consumption Behavior

3.2.1. Consumption Frequency

Frequency of superfood consumption is presented in Figure 4, showing that 33% of respondents consumed superfoods at least once a week, while 39% did not consume superfoods. Women, compared to men, consumed superfoods more frequently at least once a week ($F_s[1,1005] = 6.41, V = 0.09, p = 0.01$), as did organic buyers compared to non-organic buyers ($F_s[1,1005] = 90.44, V = 0.35, p < 0.001$). Further, the younger the respondents, the more frequently they consumed superfoods at least once a week ($r = -0.26, p < 0.001$).

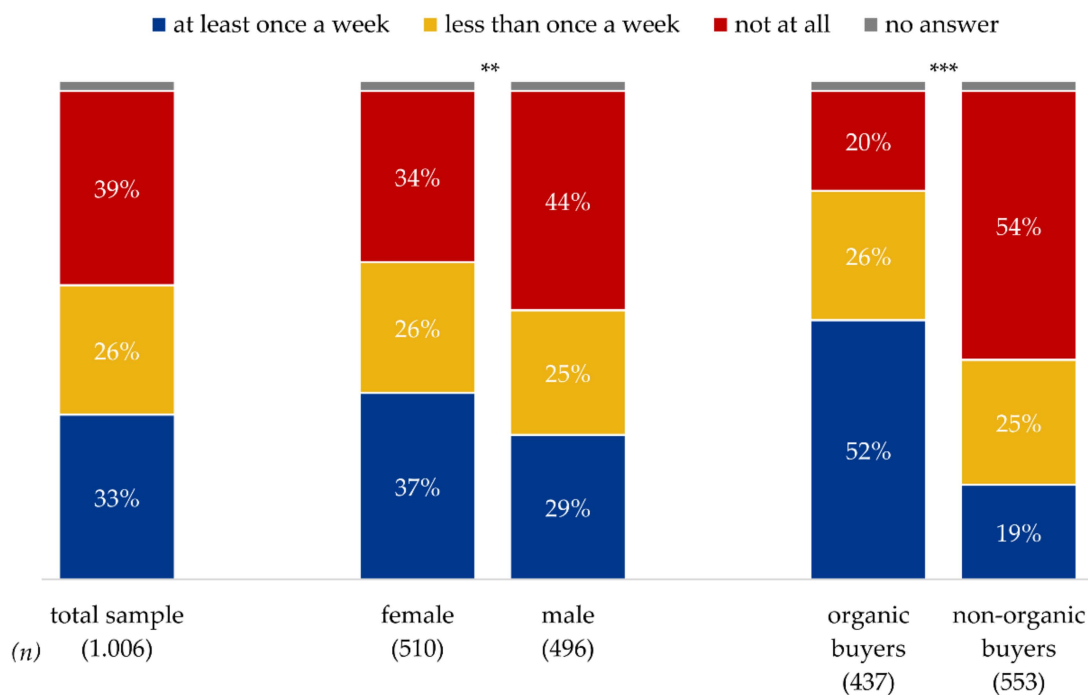


Figure 4. Frequency of superfood consumption by total sample, sex, and dietary style. Notes. *** $p < 0.001$, ** $p < 0.01$; significance test refers to “at least once a week”.

3.2.2. Reasons for Consumption

Of those who eat superfoods ($n = 590$), about one third mentioned a healthy diet (33%) and pleasant taste (31%) as reasons for superfood consumption. Other reasons were mentioned just occasionally, including the vitamin content, the digestive support, or the sheer availability of superfood products (each < 5%). About one fifth (19%) did not mention a specific reason. Further analyses for the most mentioned reasons showed that women, compared to men, mentioned the reason of a pleasant taste more frequently (35% vs. 25%; $F[1,1005] = 5.31$, $V = 0.11$, $p = 0.02$). This reason was also mentioned more frequently the younger the respondents were ($r = -0.10$, $p = 0.03$). Moreover, organic buyers, compared to non-organic buyers, mentioned the reason of a healthy diet more frequently (40% vs. 24%; $F[1,1005] = 15.26$, $V = 0.17$, $p < 0.001$).

3.2.3. Reasons for Non-Consumption

Of those who do not eat superfoods ($n = 395$), a high number (45%) did not mention a specific reason. However, the most mentioned reasons were the lack of interest in superfoods (13%), its unpleasant taste (12%), and the lack of information (11%). Other reasons were mentioned just occasionally, including a high price, the lack of an opportunity to eat them, or that conventional food is sufficient (each < 5%). Further analyses of the most mentioned reasons showed that women, compared to men, mentioned the reason of an unpleasant taste more frequently (18% vs. 8%; $F[1,1005] = 6.29$, $V = 0.15$, $p = 0.01$). No significant difference emerged for organic versus non-organic buyers ($ps \geq 0.26$), and no significant correlation emerged for age ($ps \geq 0.37$).

3.3. Risk-Benefit-Appraisal

3.3.1. Rating of Health Benefits Versus Risks

Respondents rated the health benefits of superfoods ($M = 3.67$, $SD = 1.10$) significantly higher than their potential health risks ($M = 2.14$, $SD = 1.07$; $t[846] = -22.89$, $d = 1.41$, $p < 0.001$). The ratings were negatively correlated to one another ($r = -0.21$, $p < 0.001$), indicating that those rating health benefits to be high tend to rate health risks to be low, and vice versa. Further analyses showed an interaction between sex and rating (see Figure 5):

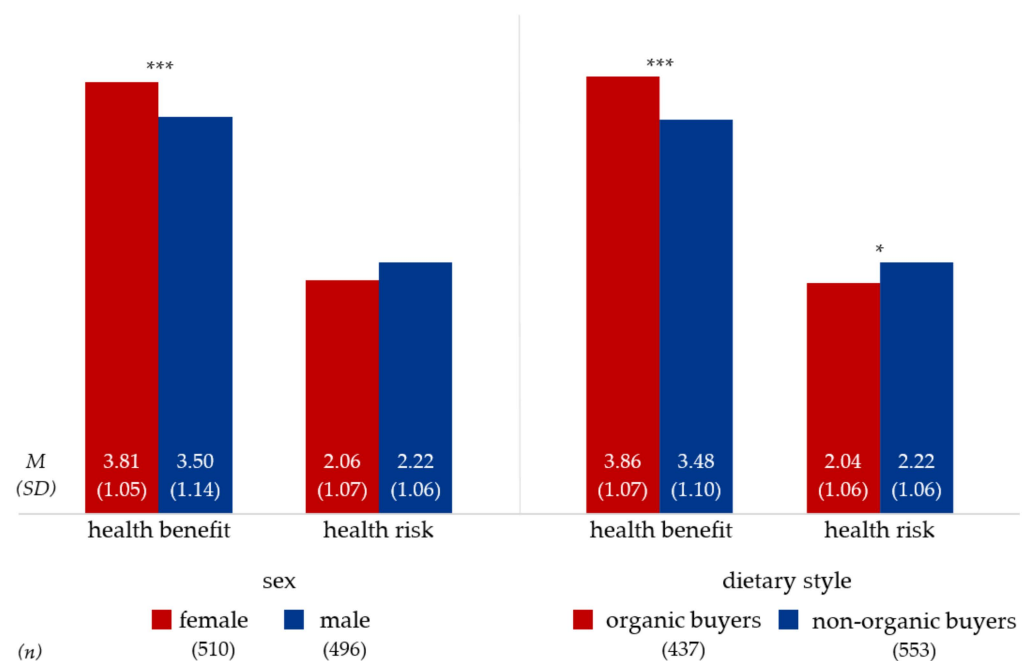


Figure 5. Rating of health benefits versus risks of superfoods by sex (left) and dietary style (right). Notes. *** $p < 0.001$, * $p < 0.05$; response scale from 1 (very low) to 5 (very high).

While women rated the health benefits to be greater than men ($t[876] = 3.70, d = -0.29, p < 0.001$), there was no significant difference for the rating of health risks ($t[853] = -1.91, d = 0.15, p = 0.06$). For dietary style, a similar interaction was observed: While organic buyers rated the health benefits to be greater than the non-organic buyers ($t[864] = -4.46, d = 0.35, p < 0.001$), non-organic buyers rated the health risks to be greater than the organic buyers ($t[841] = 2.16, d = -0.17, p = 0.03$). For age, no interaction could be observed. However, the younger the respondents, the greater they rated the health risks to be ($r = -0.08, p = 0.004$).

3.3.2. Mentioned Health Benefits

Of those who rated the health benefits of superfoods as at least of moderate height ($n = 760$), a high number (38%) gave no answer or stated that they did not know of an explicit health benefit. However, the most mentioned health benefits were the vitamin content (16%) and the general positive influence on health (12%). Other benefits were mentioned just occasionally, including strengthening the immune system, improvement of digestion, and nutrient content (each < 10%). Further analyses for the most mentioned health benefits showed that women, compared to men, mentioned the benefit of vitamin content more frequently (19% vs. 12%; $F[1,1005] = 5.81, V = 0.10, p = 0.02$), as did the organic buyers compared to the non-organic buyers (19% vs. 12%; $F[1,1005] = 6.65, V = 0.10, p = 0.01$). For age, the younger the respondents, the more likely they mentioned the benefit of a general positive influence on health ($r = -0.13, p < 0.001$).

3.3.3. Mentioned Health Risks

Of those who rate the health risks of superfoods as at least of moderate height ($n = 298$), a high number (59%) gave no answer or stated that they did not know of an explicit health risk, followed by the statement that there were no specific risks to superfoods (10%). Specific risks were mentioned just occasionally, including questionable ingredients, allergies, or intolerances, as well as health problems resulting from their origin or transportation (each < 10%).

4. Discussion

The present study aimed at assessing the public's understanding of superfoods in Germany using a representative online survey method. Three main areas were explored: the respondent's conceptual understanding of the term "superfood", their consumption behavior, and their risk-benefit appraisal. For all aspects, potential differences by sex and dietary style as well as correlations with age were taken into account.

For conceptual understanding, we tested for awareness of the term "superfood", associated properties, and explicit labelling. We found that a majority (70%) of respondents stated that they had already heard of the term "superfood". In an open-ended question, the term "superfood" was mainly associated with positive food properties, primarily with "healthy", followed by "contains vitamins". Furthermore, we found that respondents were more likely to label food as superfood that is usually imported into Germany, compared to an equivalent domestic food.

In order to analyze consumption behavior, we asked for consumption frequency and corresponding reasons for consumption versus non-consumption. A third of the respondents (33%) stated they consumed superfoods at least once a week, while about two fifths (39%) did not consume such foods. The most frequently mentioned reasons for consumption were a healthy diet and a pleasant taste. In contrast, a lack of interest, a lack of information, and an unpleasant taste were given as reasons for non-consumption. However, those not consuming superfoods often did not give explicit reasons for their non-consumption.

For the risk-benefit appraisal, respondents rated the health risks and health benefits of superfoods and were asked to specify the risks and benefits from their point of view. Our results showed a very large difference between these two ratings, with the health benefits being rated remarkably higher than the health risks. The most frequently mentioned

potential benefits were the vitamin content and the general positive influence on health. For potential risks, however, the majority did not name any risk or stated that there were no superfood-specific risks.

Taken together, our study shows that the general public seems to have a positive impression of superfoods, as they associate mainly positive food properties with the term and rate the health benefits to be much higher than potential health risks. In fact, about half of the sample (49%) rated the health benefits as high or very high (scale values 4 or 5 on a scale from 1 to 5), while only 8% of them rated the health risks to be (very) high. The strongly pronounced perception of health benefits is in line with the high number of studies that found potential health benefits for typical superfoods [8]. However, even though benefits may predominate in the scientific literature, superfoods can also pose health risks in some cases. For example, intolerances or allergic reactions can be triggered, and superfood products can contain contaminants [15–19].

In addition to the positive image of superfood, respondents seemed to link food that is usually imported to Germany more strongly with the concept of superfood than they did for the domestic equivalents. That is, on a less conscious level, the term superfood may be linked to the property of exotic, even though this was not explicitly mentioned when asking respondents to freely associate properties of food labelled as superfood. Though previous studies found beneficial influences on the human body for imported superfoods, such as chia seeds, goji berries, or quinoa [9,12,40], domestic foods also can have similar beneficial effects (e.g., linseed, blackcurrants, and oats [37–39]). Thus, considering the superfood definition as “food considered especially nutritious or otherwise beneficial to health and well-being” [7], there are also “domestic superfoods” in Germany.

The association of superfoods with imported food is also an important aspect when it comes to sustainability. In 2020, Germany imported more than 15 million tons of fruits and vegetables with a total value of about EUR 22 billion [44]. Importing food, however, can be linked to decreased nutritional potential and increased ecological footprints [45,46]. For example, the increasing international demand for quinoa strongly affected Peru as an important producer of this crop. On an environmental level, this led to an increase in the area of quinoa cultivation, and on a social and economic level, the competition for land use increased [24]. That is, to develop sustainable solutions and to support the public in having a healthy and varied diet, it seems to be an important first step to inform the population about food that is both beneficial to health and domestically available.

Across our analyses, we found systematic differences with regard to sex and dietary style of the respondents as well as correlations with their age. Women (compared to men), younger people, and organic buyers (compared to non-organic buyers) are found to be more aware of the superfood term, to associate the property “healthy” more strongly with this food group, and to consume superfood products more frequently. In addition, women and organic buyers rated the health benefits to be greater than men and non-organic buyers. These differentiated results indicate that specific parts of the population have a more positive understanding of superfoods and, thus, are more attracted to the corresponding products. For example, individuals that regularly buy organic products, are known to particularly value health aspects [47]. A study by Corallo et al. found that such individuals in particular may be more attentive to food packaging and labelling [30]. For sex, it is well known that women, in contrast to men, are usually more exposed to gender-specific advertisement and expected dietary self-control [3]. For age, younger people use social media more frequently than older people, and this media channel may be particularly important for superfood marketing [31,32]. In sum, women, young people, and organic buyers may be particularly exposed to superfood marketing, and are therefore especially attracted to such products. However, future research is needed to explicitly test for these mediating mechanisms.

This study had some limitations and aspects that should be considered when interpreting the results. For example, to assess consumption behavior and risk–benefit appraisal it was necessary to present a definition of superfood to ensure that all participants had

a similar mental representation of this term (see Table 1). For some respondents, this definition could have limited the variety of potential superfood products they thought of while responding to the questions. Thus, our results on superfood consumption and risk–benefit appraisal should be interpreted in the light of the presented definition. Another aspect that should be considered when interpreting our results is the use of open-ended questions to capture associated properties of superfood, reasons for consumption versus non-consumption, and the mention of potential health benefits and risks. An open-ended question assesses spontaneous unaided responses of the participants that usually are not fully compatible with responses they would have given using an aided closed-ended question style [48]. That is, for example, they only rarely spontaneously mentioned the property “natural, organic, or no additives”, which could be rated as an important property of the term superfood if it was provided as an explicit response option. Finally, our results were based on respondents living in Germany. The understanding of the term “superfood”, consumption behavior, and the risk–benefit appraisal may be different in other countries and cultures. For example, we found food usually imported to Germany was more likely to be labelled a superfood by the general public; thus, the labelling of concrete foods may strongly depend on national agriculture, and the mental representation of the superfood concept may vary between countries and cultures.

5. Conclusions

To our knowledge, the presented study is the first to systematically test the public’s understanding of the term superfood. The population in general, and specific subgroups in particular (i.e., women, younger people, and organic buyers), had a positive attitude towards superfoods. In particular, they rated the health benefits of superfoods to be very high. Conversely, they thought that there were almost no health risks, although previous studies have highlighted some potential health risks. Furthermore, particularly imported food was classified as superfood, even though domestic food can have similar beneficial effects. Future studies should assess the public’s understanding of superfoods in countries and cultures other than Germany to investigate whether the present findings are universal to the concept of superfoods. Furthermore, future research in the area of superfood-specific communication strategies is required to develop concrete measures to support the public in having a healthy and varied diet. The present findings indicate that target-group specific information campaigns, predominantly in a sex and age specific setting, can be a useful tool to increase the population’s awareness of potential health risks of superfood consumption and to highlight the presence of equivalent “domestic superfoods” in Germany. The latter could be achieved by comparing nutritional values of usually imported (e.g., chia seeds) versus domestic “superfoods” (e.g., linseed). In this context, decision makers should include relevant stakeholders as multipliers in their communication efforts, such as consumer centers and NGOs.

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Institutional Review Board Statement: Ethical review and approval were waived for this study due to the following considerations: The study did not include medical aspects, person-identifiable data, or sensitive or confidential data. No psychological tests were used. It was always possible for respondents to drop out of the survey before completion or to not answer one or more questions in the survey. In addition, data collection was carried out in line with the standards established by the Association of German Market Research Institutes (ADM; see <https://www.adm-ev.de/en/standards-guidelines/>, accessed on 14 January 2022). Respondents expressed their consent to participate in the surveys. All data were recorded and processed anonymously.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The survey data presented in this study are available from the corresponding author upon request.

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Conflicts of Interest: The authors declare no conflict of interest.

References

1. IRI. Superfoods Mit Superzahlen [Superfoods with Super Numbers]. 2016. Available online: <https://www.iriworldwide.com/de-de/insights/news/superfood-mit-superzahlen> (accessed on 14 January 2022).
2. Van den Driessche, J.J.; Plat, J.; Mensink, R.P. Effects of superfoods on risk factors of metabolic syndrome: A systematic review of human intervention trials. *Food Funct.* **2018**, *9*, 1944–1966. [CrossRef] [PubMed]
3. Sikka, T. The contradictions of a superfood consumerism in a postfeminist, neoliberal world. *Food Cult. Soc.* **2019**, *22*, 354–375. [CrossRef]
4. Kuchheuser, P.; Jost, S.; Birringer, M. Superfoods im Fokus: Ein kritischer Blick auf Chiasamen und Co [Focus on superfoods: A critical view on chiasseeds and Co]. *Aktuelle Ernährungsmedizin* **2021**, *46*, 36–40. [CrossRef]
5. Regulation (EU) 2015/2283 of the European Parliament and of the Council of 25 November 2015 on Novel Foods, Amending Regulation (EU) No 1169/2011 of the European Parliament and of the Council and Repealing Regulation (EC) No 258/97 of the European Parliament and of the Council and Commission Regulation (EC) No 1852/2001. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32015R2283> (accessed on 14 January 2022).
6. European Commission. Novel Food Catalogue. Available online: https://ec.europa.eu/food/safety/novel-food/novel-food-catalogue_en (accessed on 14 January 2022).
7. Oxford English Dictionary. Superfood. Available online: <https://www.oed.com/view/Entry/194186?redirectedFrom=superfood#eid69476470> (accessed on 14 January 2022).
8. Proestos, C. Superfoods: Recent data on their role in the prevention of diseases. *Curr. Res. Nutr. Food Sci.* **2018**, *6*, 576–593. [CrossRef]
9. Onneken, P. *Salvia hispanica* L (chia seeds) as brain superfood: How seeds increase intelligence. *Glob. J. Health Sci.* **2018**, *10*, 69–72. [CrossRef]
10. Jagdale, Y.D.; Mahale, S.V.; Zohra, B.; Nayik, G.A.; Dar, A.H.; Khan, K.A.; Abdi, G.; Karabagias, I.K. Nutritional profile and potential health benefits of super foods: A review. *Sustainability* **2021**, *13*, 9240. [CrossRef]
11. Sargi, S.C.; Silva, B.C.; Santos, H.M.C.; Montanher, P.F.; Boeing, J.S.; Santos Júnior, O.O.; Souza, N.E.; Visentainer, J.V. Antioxidant capacity and chemical composition in seeds rich in omega-3: Chia, flax, and perilla. *Food Sci. Technol.* **2013**, *33*, 541–548. [CrossRef]
12. Singh, S.; Singh, R.; Singh, K.V. Quinoa (*Chenopodium quinoa* Willd), functional superfood for today's world: A review. *World Sci. News* **2016**, *58*, 84–96.
13. Ayerza, R. The seed's protein and oil content, fatty acid composition, and growing cycle length of a single genotype of chia (*Salvia hispanica* L.) as affected by environmental factors. *J. Oleo Sci.* **2009**, *58*, 347–354. [CrossRef]
14. Mack, L.; Munz, S.; Capezzone, F.; Hofmann, A.; Piepho, H.P.; Claupein, W.; Graeff, S. Sowing date in egypt affects chia seed yield and quality. *Agron. Soils Environ. Qual.* **2018**, *110*, 2310–2321. [CrossRef]
15. Larramendi, C.H.; García-Abujeta, J.L.; Vicario, S.; García-Endrino, A.; López-Matas, M.A.; García-Sedeño, M.D.; Carnés, J. Goji Berries (*Lycium barbarum*): Risk of allergic reactions in individuals with food allergy. *J. Investig. Allergol. Clin. Immunol.* **2012**, *22*, 345–350. [PubMed]
16. Albunni, B.A.; Wessels, H.; Paschke-Kratzin, A.; Fischer, M. Antibody cross-reactivity between proteins of chia seed (*Salvia hispanica* L.) and other food allergens. *J. Agric. Food Chem.* **2019**, *67*, 7475–7484. [CrossRef] [PubMed]
17. Jeszka-Skowron, M.; Oszust, K.; Zgoła-Grzeškowiak, A.; Frać, M. Quality assessment of goji fruits, cranberries, and raisins using selected markers. *Eur. Food Res. Technol.* **2018**, *244*, 2159–2168. [CrossRef]
18. Štepec, D.; Tavčar, G.; Ponikvar-Svet, M. Surprisingly high fluorine content in some exotic superfoods. *J. Fluor. Chem.* **2020**, *234*, 109521. [CrossRef]
19. Papadimitriou, T.; Kormas, K.; Vardaka, E. Cyanotoxin contamination in commercial Spirulina food supplements. *J. Consum. Prot. Food Saf.* **2021**, *16*, 227–235. [CrossRef]
20. Mesías, M.; Holgado, F.; Márquez-Ruiz, G.; Morales, F.J. Risk/benefit considerations of a new formulation of wheat-based biscuit supplemented with different amounts of chia flour. *LWT Food Sci. Technol.* **2016**, *73*, 528–535. [CrossRef]
21. Purvis, B.; Mao, Y.; Robinson, D. Three pillars of sustainability: In search of conceptual origins. *Sustain. Sci.* **2019**, *14*, 681–695. [CrossRef]
22. Da Cruz, N.F.; Marques, R.C. Scorecards for sustainable local governments. *Cities* **2014**, *39*, 165–170. [CrossRef]
23. Magrath, A.; Sanz, M.J. Environmental and social consequences of the increase in the demand for 'superfoods' world-wide. *People Nat.* **2020**, *2*, 267–278. [CrossRef]
24. Bedoya-Perales, N.S.; Pumi, G.; Talamini, E.; Padula, A.D. The quinoa boom in Peru: Will land competition threaten sustainability in one of the cradles of agriculture? *Land Use Policy* **2018**, *79*, 475–480. [CrossRef]
25. Meyerding, S.; Kürzdörfer, A.; Gassler, B. Consumer preferences for superfood ingredients—The case of bread in Germany. *Sustainability* **2018**, *10*, 4667. [CrossRef]

26. Liu, H.; Meng-Lewis, Y.; Ibrahim, F.; Zhu, X. Superfoods, super healthy: Myth or reality? Examining consumers' repurchase and WOM intention regarding superfoods: A theory of consumption values perspective. *J. Bus. Res.* **2021**, *137*, 69–88. [CrossRef]
27. Lucas, B.F.; Götze, F.; Costa, J.A.V.; Brunner, T.A. Consumer perception toward "superfoods": A segmentation study. *J. Int. Food Agribus. Mark.* **2022**, *2022*, e2044955. [CrossRef]
28. Karelakis, C.; Zevgitis, P.; Galanopoulos, K.; Mattas, K. Consumer trends and attitudes to functional foods. *J. Int. Food Agribus. Mark.* **2020**, *32*, 266–294. [CrossRef]
29. Köster, E.P. Diversity in the determinants of food choice: A psychological perspective. *Food Qual. Prefer.* **2007**, *20*, 70–82. [CrossRef]
30. Corallo, A.; Latino, M.E.; Menegoli, M.; Spennato, A. A survey to discover current food choice behaviors. *Sustainability* **2019**, *11*, 5041. [CrossRef]
31. Newman, N.; Fletcher, R.; Levy, D.A.L.; Nielsen, R.K. Reuters Institute Digital News Report 2016. Available online: <https://reutersinstitute.politics.ox.ac.uk/sites/default/files/research/files/Digital%2520News%2520Report%25202016.pdf> (accessed on 14 January 2022).
32. Roth, A.; Zawadzki, T. Instagram as a tool for promoting superfood products. *Ann. Mark. Manag. Econ.* **2018**, *4*, 101–113. [CrossRef]
33. Kantar. Kantar Profiles Audience Network. Available online: <https://www.kantar.com/expertise/research-services/panels-and-audiences/kantar-profiles-network> (accessed on 14 January 2022).
34. Nayak, M.S.D.P.; Narayan, K.A. Strengths and weaknesses of online surveys. *J. Humanit. Soc. Sci.* **2019**, *24*, 31–38.
35. Evans, J.E.; Mathur, A. The Value of Online Surveys. *Internet Res.* **2005**, *15*, 195–219. [CrossRef]
36. U.S. Department of Agriculture. Food Data Central. Available online: <https://fdc.nal.usda.gov/> (accessed on 6 January 2022).
37. Gopalan, A.; Reuben, S.C.; Ahmed, S.; Darvesh, A.S.; Hohmann, J.; Bishayee, A. The health benefits of blackcurrants. *Food Funct.* **2012**, *3*, 795–809. [CrossRef]
38. Tripathi, V.; Abidi, A.B.; Marker, S.; Bilal, S. Linseed and linseed oil: Health benefits—A review. *Int. J. Pharm. Biol. Sci.* **2013**, *3*, 434–442.
39. Martínez-Villaluenga, C.; Peñas, E. Health benefits of oat: Current evidence and molecular mechanisms. *Curr. Opin. Food Sci.* **2017**, *14*, 26–31. [CrossRef]
40. Shah, T.; Bule, M.; Niaz, K. Goji berry (*Lycium barbarum*): A superfood. In *Nonvitamin and Nonmineral Nutritional Supplements*; Nabavi, A.M., Silva, A.S., Eds.; Academic Press: London, UK, 2019; pp. 257–264. [CrossRef]
41. Rao, J.N.K.; Scott, A.J. On chi-squared tests for multiway contingency tables with cell proportions estimated from survey data. *Ann. Statist.* **1984**, *12*, 46–60. [CrossRef]
42. Long, J.A. jtools: Analysis and Presentation of Social Scientific Data. Available online: <https://CRAN.R-project.org/package=jtools> (accessed on 15 February 2022).
43. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed.; Routledge Academic: New York, NY, USA, 1988. [CrossRef]
44. Statistisches Bundesamt. Genesis-Online Datenbank 51000-0005: Aus- und Einfuhr (Außenhandel): Deutschland, Jahre, Waren-systematik. Available online: <https://www-genesis.destatis.de/genesis/online?operation=statistic&levelindex=0&levelid=1632834112865&code=51000#abreadcrumb> (accessed on 28 September 2021).
45. Lee, C.N.; Loke, M. Local and imported fruits in Hawai'i from a nutrient perspective. *Coll. Trop. Agric. Hum. Resour.* **2017**, *FN-14*, 1–11.
46. Bringezu, S.; Banse, M.; Ahmann, L.; Bezama, N.A.; Billig, E.; Bischof, R.; Blanke, C.; Brosowski, A.; Brüning, S.; Borchers, M.; et al. *Pilotbericht zum Monitoring der Deutschen Bioökonomie [Pilot Report on Monitoring the German Bioeconomy]*; Center for Environmental Systems Research (CESR): Kassel, Germany, 2020. [CrossRef]
47. Basha, M.B.; Mason, C.; Shamsudin, M.F.; Hussain, H.I.; Salem, M.A. Consumers attitude towards organic food. *Procedia Econ. Financ.* **2015**, *31*, 444–452. [CrossRef]
48. Reja, U.; Lozar Manfreda, K.; Hlebec, V.; Vehovar, V. Open-ended vs. close-ended questions in web questionnaires. *Adv. Methodol. Stat.* **2003**, *19*, 159–177.