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Review

Gender Differences in Attitudes to Vegans/Vegetarians and Their Food Preferences, and Their Implications for Promoting Sustainable Dietary Patterns–A Systematic Review

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Abstract: Limiting meat consumption has recently become one of the key issues linked to public health and environmental sustainability. This is reflected in the strong emphasis on increasing promotion of plant-based nutritional styles, such as vegan and vegetarian diets. Vegan/vegetarian diets appeal to certain demographic groups more than to others. The most striking difference, however, is found between the sexes. Men and women differ in their preferences for plant products and in their attitudes to meat consumption. There are also differences between their motivations to start and/or follow a vegan/vegetarian diet. Major differences have also been observed in men's and women's attitudes towards people following plant-based diets. Vegetarian diets are generally considered to be less masculine than meat-based diets, and omnivores exhibit more prejudice against vegetarian men than women. This study follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) systematic literature review model. The Web of Science and PubMed databases were searched (up to January 2020) to identify studies, which analysed variables directly or indirectly related to inter-sex differences with regard to the vegan/vegetarian diet. After the screening process based on the relevance and quality criteria, 29 articles were included in the study. The purpose of this review is to raise awareness of these gender differences, not only as regards social perceptions, but also in terms of individual attitudes to vegetarian/vegan diets. Ignoring those differences hinders the promotion of plant-based diets and may explain the relatively meager success of previous efforts to promote sustainable nutritional styles.

Keywords: vegan diet; vegetarian diet; gender differences; stereotypes; masculinity; diet change; healthy and sustainable dietary patterns; public health impact of dietary change

1. Introduction

The vegetarian diet includes plant products and excludes all or some animal foods (mostly meat), whereas the vegan diet is a diet based solely on vegetables, fruit and cereals and excludes all animal-based products. This nutritional pattern places a considerably lesser burden on the natural environment, while intensive animal farming contributes to environmental damage and climate change [1,2]. Results from the recently published review indicate that the vegan diet is the optimal diet for the environment, because production of plant-based food results in the lower level of greenhouse gas emissions (GHGEs) compared to animal breeding [1]. What is more, the sustainability of vegan/vegetarian diets stems not only from its relatively low environmental impact, but also from the

fact that this type of diet is safe for consumption, ensures an adequate level of nutrients and is culturally acceptable for most people [3]. For instance, research conducted over the past decades has shown that following a vegan/vegetarian diet may bring many important health benefits [4–7]. Additionally, more and more importance is now also being attached to the ethical and health-related aspects of mass-scale animal production [8]. Attempts to solve the problem of unsustainable animal-based foods by promoting, e.g., insects-based diet or artificial meat products meet general public rejection based on cultural objections and neophobic reactions (e.g., [9]). The meat-based diet remains the dominant nutritional style in Western culture, while efforts to promote non-meat diets have only achieved relatively meager success.

What is more, across Europe, Asia, Africa and the Americas, men consume more meat than women [10–12]. Meat is often considered to be a 'masculine' food [13], and men with more masculine jobs tend to consume more meat [14,15]. A reverse trend is associated with dairy products, fruit and vegetables, which are perceived as typically feminine foods [16]. Men also explicitly report more positive attitudes towards meat consumption [17]. Across Western societies, women are twice as likely as men to be vegan or vegetarian [18–20]. Men and women differ in their attitudes to meat consumption and in their preferences for plant products. The differences in food preferences between the sexes are observed already in childhood. Studies by Cooke and Wardle [21], conducted on a large group of school-age children, show that girls like fruit and vegetables more than boys. Conversely, boys like fatty and sugary foods, meat, processed meat products and eggs more than girls. The results of other studies also confirm that, compared with boys, girls eat more fruit, more vegetables and more fruit and vegetables combined [22], while boys prefer fast food meals, meat, cold cuts and fish [23,24]. It is possible that these differences are not so much a result of gender differences in food preferences, as they are a reflection of the differences in attitudes to girls' and boys' upbringings when a perceptual link between the meat-based diet and masculinity is formed [25].

There are also differences between men's and women's motivations to start and follow a vegetarian diet. Inter-sex differences can be observed not only on the behavioral and attitudinal level but also in the perception of gender stereotypes connected to diet. According to widespread beliefs, for instance, a big steak is a suitable meal for a man and a small salad is a typical meal for a woman. These factors play a crucial role in the adoption and modification of eating habits in different age groups and social contexts [18,26]. When choosing what to eat, a person well integrated in a specific social group is guided not only by rational and scientific arguments but also by the social perception of their decision [27,28]. How an individual is perceived largely depends on the perception of their gender and compliance of their choices with what is considered typical of that gender [29].

While the relationship between diet and sex/gender, especially in the context of meat consumption, has been the subject of scientific debate for a long time [30–32], scientists have only recently begun to empirically study people who exclude meat from their diet, i.e., vegans/vegetarians. The purpose of this review is to raise awareness of the gender differences as regards social perceptions, but also in terms of individual attitudes to vegetarian/vegan diets. Therefore, the summary of the current state of knowledge about gender and veganism/vegetarianism, both from the perspective of meat-eaters and vegans/vegetarians themselves, was prepared. In the following, we analyze the relation between gender roles and the social context of starting and maintaining a vegan/vegetarian diet. In this context, we provide a review of studies that focus on the sex of meat-eaters and the differences in their approach to vegans/vegetarians and veganism/vegetarianism that are gender-specific. Moreover, we examined research on vegans/vegetarians themselves and on the differences between vegan/vegetarian women and men. In this way, we assessed the characteristics linked to gender and their role in vegan/vegetarian food preferences. Furthermore, based on this review, the second objective was to identify unresolved issues, limitations and avenues for future research. In discussing those multiple aspects, we place emphasis on the challenges faced by both sexes when switching to a meatless diet and the implications of those difficulties for reducing overall meat consumption.

Our hypothesis is that men and women differ significantly in their preferences for plant products and in their attitudes toward meat consumption. However, it may be a reflection of social context in which the personal diet is chosen. Implications of the differences cannot be ignored when promoting sustainable diets and may help explain the relatively meager success of previous efforts to promote sustainable nutritional styles.

2. Method

This study follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) systematic literature review model [33]. The inclusion criteria for this study were qualitative and quantitative study designs, studies that measured variables directly or indirectly related to inter-sex differences with regard to the vegan/vegetarian diet and studies written in English. Databases included the Web of Science and PubMed. The timespan for literature search included all years available in the database up to January 2020. Keywords were used to capture the relevant studies that targeted vegans/vegetarians and sex/gender differences among meat-eaters and differences in their attitudes toward vegans/vegetarians. We used the following key terms in our search: (vegetarian* or vegan* or "plant-based*" or "vegetarian diet" or "vegan diet" or "plant-based diet") and (gender* or female* or male or woman or women or "gender differences").

This initial search yielded a large number of results (>2000). To be included in the review, studies from this pool had to focus on the psychological aspects of inter-sex differences with respect to the vegan/vegetarian diet. For this purpose, the thematic scope of the articles was narrowed down to categories: psychology clinical or psychology social or neurosciences or psychology multidisciplinary or psychiatry or psychology or social sciences interdisciplinary or psychology developmental or sociology.

This method allowed us to obtain 302 articles which were then analyzed in order to delete duplicates. In the next step, an analysis was performed of the titles (n = 203), and those articles for which there was a thematic match (n = 58) were selected for further analysis. Subsequently, full text analyses of the articles selected were conducted, which resulted in those not concerning (attitudes towards) vegans/vegetarians and those not discussing sex/gender differences (e.g., articles discussing exclusively women's or men's attitudes to vegetarians) being deleted from the sample. As a result, 29 articles were disqualified from the review, with the remaining 29 articles on sex/gender differences in attitudes towards veganism/vegetarianism being selected for an in-depth examination–Figure 1.

2.1. Inclusion Criteria

This systematic literature review utilized three different inclusion criteria: (a) studies should focus on vegetarianism and/or veganism, (b) studies should show sex/gender differences, (c) studies should be published in English.

2.2. Exclusion Criteria

This systematic literature review utilized three exclusion criteria: (a) relevance, (b) review and conference papers were ignored, (c) duplicate studies. Both quantitative and qualitative studies have been included in this review.

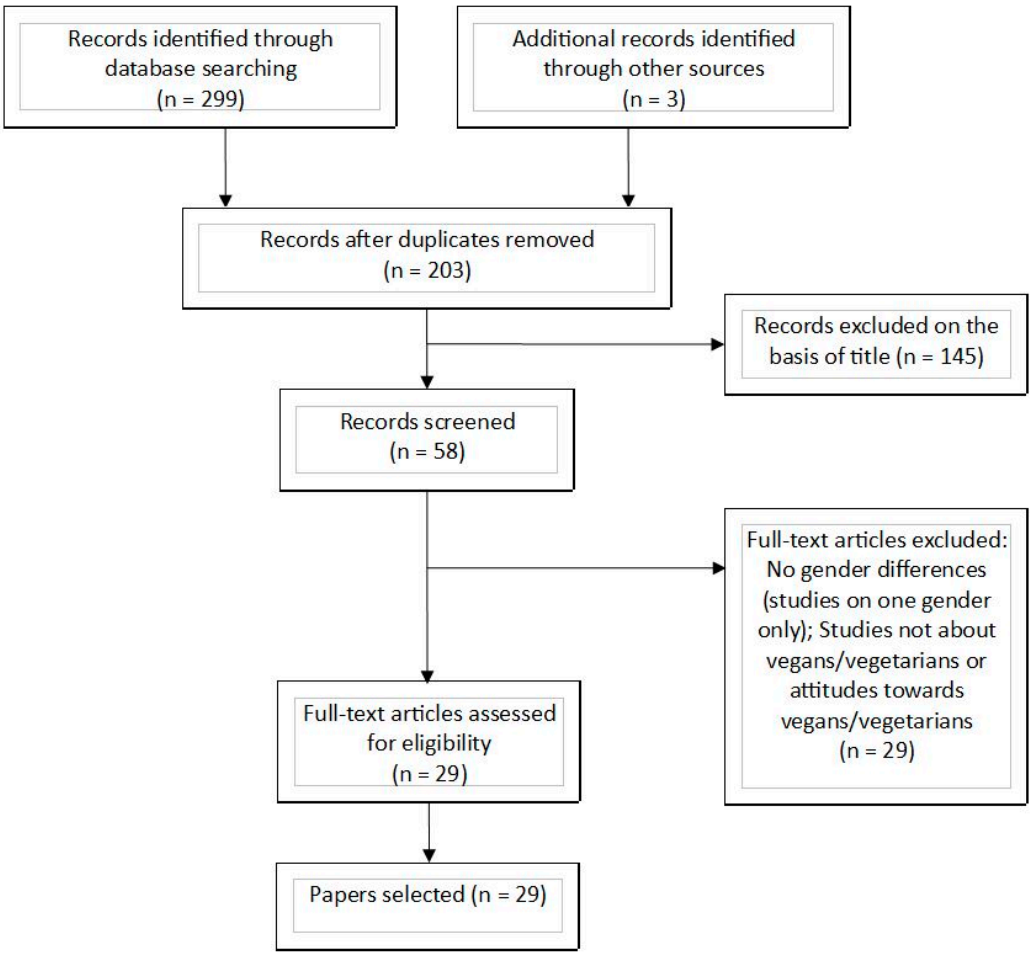

Figure 1. Diagram showing the screening process based on PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)-[34].

3. Results

As it is impossible to directly compare the results of the studies included in this review, no meta-analysis was performed. A narrative synthesis of the articles selected was therefore carried out.

The selected articles can be divided into two main categories, each of which concerns veganism/vegetarianism and sex/gender, but in different ways. The first one is the perception of vegans/vegetarians by meat-eaters, depending on their sex (of the vegans/vegetarians assessed or of the meat-eaters). The second category comprises articles on the differences between vegan/vegetarian men and women.

3.1. Gender-Biased Perception of Vegans/Vegetarians

Even though vegans/vegetarians are often regarded as a minority group, which leads to discrimination, or as a threat to the values and principles of the Western lifestyle [35,36], most often they encounter positive reactions from meat-eaters [37,38]. However, some studies show that omnivorous men have a more negative attitude towards vegetarians than omnivorous women (e.g., [37,39,40]). For instance, an analysis by Judge and Wilson [37] shows a main effect of sex, indicating that omnivorous men expressed significantly less positive attitudes towards vegetarians and vegans than female non-vegetarians. At the same time, men scored lower on the dominance and right-wing authoritarianism scale. This may suggest that the skeptical attitude of men towards vegetarians results from the fact that they are perceived as a threat to the status quo based on the commonly accepted principles and male dominance. These factors may be linked to a general tendency to metaphorically

associate meat with masculinity, which results in male vegetarians being seen as less masculine than meat-eating men [38,41]. Given that in many cultures masculinity is, to a large extent, a social construct rather than a biological phenomenon, which is manifested through social displays, competition [38] and position in social hierarchy, it may be hypothesized that the perception of masculinity will play a major part in the context of following vegan/vegetarian diets. This attitude may manifest itself in many forms and contexts, e.g., in the appearance of food packaging or interior design in restaurants.

3.2. Gender Roles and the Vegan/Vegetarian Diet

In their studies of the influence of dietary preferences on maleness and femaleness, Rozin and colleagues [41] found that individuals who were described as preferring a beef-based diet were rated as less feminine than individuals described as preferring a vegetable-based diet. In addition, people who preferred a beef-based diet were also seen as more masculine. Similarly, research by Ruby and Heine [38] confirms that vegetarian men were perceived as less masculine than omnivorous men (see also [10,15]). However, the ratings of masculinity reported by female targets were not influenced by their dietary preferences.

On the other hand, research by Browarnik [18] does not confirm this effect and shows no differences in the evaluations of vegetarian and carnivorous men. In his study, participants were asked to read a description of a student (male or female) who is applying for a job in the students' association. The description contained information about the dish (vegetarian or meat) that the student in question would prepare for the party to celebrate their possible success. No significant differences in the perception of women and men depending on the dish have been observed. The information about the student's sex and the type of food they prepared did not influence either the likelihood of choosing that candidate or whether the student was considered moral, healthy and likeable. The author hypothesized that the specificity of the place where the experiment was conducted (a liberal university with a vegetarian canteen) and the respondents' characteristics (of whom more than 90% knew someone who was a vegetarian) may have had an impact on the results. Besides, the targets evaluated by the participants were not clearly defined as vegetarians—their dietary preferences were only implied in the description of the dish they would prepare for others. In a recent replication of this study on masculinity and vegetarianism [42], account was taken of these limitations. The author made sure that the subjects evaluated a person who was clearly defined as a vegetarian. However, the study does not confirm the existence of inter-sex differences either; there were no differences in the perception of men and women, or vegetarians and generalists. The author suggests that these results may be explained by the growing awareness and increasing consumption of meatless meals in the population and by the growing popularity of vegetarianism. However, he also acknowledges the limitations of the sample size. Nevertheless, the gender effect is observed when a distinction between vegetarian and vegan is taken account of in the experiment. In the second of his series of studies, Thomas [42] gave his participants a description of a person, taking into account the fact that the person was a vegan and cooked vegan dishes or was a vegetarian and cooked vegetarian dishes. Although there were no differences in the overall ratings of masculinity when comparing vegan and vegetarian targets of the same sex, male and female participants differed in their gendered perceptions of vegetarian targets. Moreover, a subsequent study [42] confirmed that targets following a vegan diet were perceived as less masculine than targets following an omnivorous diet. The effect of following a vegan diet is stronger for men than for women. The authors point out that these results may be due to the fact that more and more people in the world are reducing their meat consumption. Vegetarians are now treated as in-group members (because their diet is not so different from that of an average person). However, this does not apply to vegans, who do not consume a wide range of products that are part of an average person's everyday diet.

Vegetarian men also encounter hostility in their social group more often than women do. In a study based on individual and group interviews, Torti [43] found that men were often teased, mocked and made fun of because of their vegetarian identity. What is more, they were called names and their

sexuality or sexual orientation, and masculinity were called into question. Further evidence of the perceived necessity to ensure that our choices comply with the stereotypical image of our social group was provided by White and Dahl [44] in a study of consumer preferences. The study showed that men (but not women) were motivated to avoid products associated with a dissociative (i.e., female) group. This effect was particularly strong when consumption was to occur in public.

However, recent studies show that, in some social groups, associations between meat-eating and masculinity have changed [45]. Researchers propose a concept of New Masculinity, which includes notions of authenticity and holistic self-awareness [46]. The 'New Masculine' men are less attached to meat consumption and new masculinity correlates positively with attitudes towards vegetarians [45].

3.3. Evaluation of Masculinity and Attractiveness of Vegans/Vegetarians

Inter-sex differences in attitudes to other people's eating habits manifest themselves when individuals start intimate relationships. Eating together is one of the well-scripted dating activities considered to be courtship behaviors [47,48]. People are generally motivated to present themselves in a favorable light, and the image they convey may have implications for how they are treated by others and how they feel about themselves. The potential for using one's nutritional habits to create a particular impression on other people is based on certain stereotypes [49]. Characteristics stereotypically associated with food intake originate from perceived gender roles, social attitudes to health and weight, etc. For example, people who eat 'healthy' foods and smaller meals are thought to be more feminine. Conversely, those who eat 'unhealthy' foods and larger meals are perceived as more masculine [50]. This perception of food in terms of femininity–masculinity also translates into classifying individuals with a preference for a specific diet into 'masculine' and 'feminine' groups, and, consequently, into forming a preference for certain individuals.

These observations are borne out by empirical research. Studies conducted in Italy showed that women preferred omnivorous men, rated them as more attractive and felt more positive about them than about vegetarians [51]. The participants were asked to evaluate 6 different profiles (3 vegetarians, 3 omnivorous) of male targets (age, height, weight, profession, hobbies, eating habits and favorite dishes). The attribution of masculinity mediated this relationship: vegetarian men were considered less attractive because they were perceived as less masculine. This effect, however, may be culture-specific. International studies on attitudes towards vegetarians have shown that, for instance, American and Brazilian women show some admiration for vegetarians [52]. Nevertheless, it is not clear whether this admiration relates to the idea of following a certain type of diet and complying with its specific rules (which may be perceived as involving strong will and specific skills) or whether it is associated with the sexual attractiveness of this type of potential partner.

3.4. Veganism/Vegetarianism and Social Support

Eating habits in the family play a major part in maintaining a vegetarian diet [53]. The wish to become vegetarian may be frowned upon by other family members. The task seems most difficult for young individuals whose diet is largely shaped by adult family members' decisions. In a study by Worsley and Skrzypiec [54], conducted on a group of teenage subjects, approximately one-third of vegetarians agreed that it was difficult to avoid eating meat at home. The pressure to eat meat despite their wishes was relatively common. However, teenagers receive support for their dietary decisions mostly from their mothers [54], and female vegetarians often had mothers and sisters who were vegetarians as well. What is more, teenage women received or expected to receive more support from their families and friends, particularly other women [26].

Female vegetarians claimed to know more people who were vegetarians, but they did not have more vegetarians among close friends [26]. This may suggest that vegetarian girls are more likely to notice this kind of habit in others, but they do not restrict their social circle to vegetarians only. Teenage men expected less support from their friends than their female peers did [54], which may result from a perception that they fail to conform to traditional gender norms.

As these studies demonstrate, young vegetarians may count on their mothers' support. On the other hand, mothers of young children are often concerned about the negative social consequences of their children's vegetarianism. In an analysis of internet forum posts, mothers of vegetarians or vegans were concerned that their children could encounter difficulties in adhering to their diet in kindergarten or at children's birthday parties [55]. The study, however, did not examine the fathers' attitudes to their children's choice of diet. This may be because, in the case of young children, it is often the mother who prepares meals and shapes her children's food preferences and dietary norms.

Most of the abovedescribed studies examine the social context of Western counties. A single study [56] investigating the experience of Black South African vegetarians showed that men from this group also reported having encountered greater hostility from their families, and greater teasing in general, about becoming vegetarian than women did. However, different results were obtained in a study by Merriman [57], which indicated greater hostility and lack of understanding towards female vegetarians. Nevertheless, the author points out that the results obtained from qualitative research may be inconclusive. It is possible that the findings present a double standard whereby men are seen as capable of taking control of their bodies, while women are not.

3.5. Veganism/Vegetarianism and Gender Studies

Anthropological observations suggest that eating meat was a privilege of the male-dominated social elite, which firmly rooted meat consumption in the context of power analysis, including the issue of distribution of work and power between the sexes. At the same time, vegan identity has now become a social marker and an indicator of affiliation with groups sharing a certain worldview. There are multiple views of veganism within the feminist movement itself. As pointed out by Rudy [19], feminism involves promoting a change of attitude towards all minorities, including LGBT communities; it also embraces the notions of novel food technologies and local production ('localvore'). In this regard, veganism is not an integral part of feminism, which should rather be regarded as an expression of a general change in attitudes. The link between feminism and vegetarianism is not explicit. A study by Rozin and colleagues [41] showed a poor correlation between the scales used for measuring these attitudes. This means that other factors may underlie these two phenomena, which weakens the correlation. A study by Adams [10] investigated the link between violence against women and treatment of farm animals. Moreover, Hamilton [58] pointed to the consequences of making such a link for the understanding of both phenomena. This may have a negative impact on the development of the feminist movement, and it distorts the understanding of human violence against animals. Feminism and veganism are therefore two correlated frameworks for developing attitudes in response to social problems, but there is no integral or structural link between them (as proposed by Adams [10]).

Another, however still somewhat neglected, area of study comprises attitudes towards gay vegetarian men. Studies show not only that gay men are evaluated more negatively than lesbians in general, but that they are evaluated more negatively by male heterosexuals [59]. In general, men subscribe to traditional gender roles and gender bias to a larger extent than women [60]. It is possible that gay men who do not consume meat may pose a double threat to the social status quo, not only by violating gender role expectations, but also by following the diet which may be considered less masculine.

4. Gender Differences among Vegans/Vegetarians

When analyzing issues related to switching to a vegan/vegetarian diet, it is perhaps most important to note the difference in the popularity of veganism/vegetarianism among men and women. Across Western societies, women are twice as likely as men to be vegan or vegetarian (e.g., [18–20]). Men and women differ in their attitudes to meat consumption and in their preferences for plant-based products. There are also differences in their motives to start and follow a vegan/vegetarian diet. Strong gender bias in the perception of different diets in terms of femininity–masculinity can have different consequences when women or men decide to follow a vegetarian diet. It is suggested that men who choose a

vegetarian diet might experience a conflict between their intrinsic preferences and gender norms, and they tend to forgo their intrinsic preferences to conform to the masculine gender identity [61]. Women, on the other hand, appear to be less concerned with making gender-congruent choices [61]. Besides, it seems that men are under more social pressure when it comes to maintaining stereotypical social norms [43].

One of the possible hypotheses explaining the significant discrepancy in the number of vegetarian men and women may be that men are afraid of losing their masculinity, both in their own eyes and in the eyes of their social group. Social perceptions of diets in terms of masculinity–femininity and their adjustment to gender stereotypes may be a major barrier to becoming a vegetarian. This barrier may be as important as the obstacles linked to the perception of flavors or convictions about the nutritional value of meat-based diets.

4.1. Vegetarian Diet and Health

Another important aspect is the inter-sex differences in motivation to follow a vegetarian diet. Multiple research studies show that one of the main reasons people choose to follow a vegetarian diet involves health concerns (e.g., [53,62]). A number of research and article reviews show that people who follow the vegetarian diet have lower all-cause mortality rate, with significantly lower mortality from ischemic heart disease, circulatory diseases and cerebrovascular disease [4]. Vegetarians have also been found to have lower risks for diabetes, diverticular disease and eye cataracts [63]. A vegetarian diet is also correlated with lower prevalence of the metabolic syndrome [64,65]. Some studies suggest that vegan diets show statistically significant protection for overall cancer incidence [4,66]. However, men and women differ also in their attitudes towards food healthiness. In general, women have a higher level of awareness and better knowledge of nutrition than men [67] and more often than men consider the health aspects of specific foods when making food choices. Women also try following diets more often than men (i.e., a low-fat diet or a low-carbohydrate diet) and are more concerned about excessive consumption of sugar, carbohydrates and fat [68]. In addition, women are more likely to reject foods with high fat content and instead consume more fiber [69]. Even in adolescence, teenage girls eat more fruit and vegetables compared with boys (e.g., [22]). On the other hand, girls are more self-conscious and prioritize weight loss over health benefits [70]. Meat avoidance in female adolescents has been linked to their perception of meat as a fattening food [54]. Studies by Mooney and Walbourn [71] conducted on college students show that men and women differ with respect to the type of foods they reject. Women avoid meat more often, whereas men avoid vegetables. This difference may be attributed to the fact that some young women perceive the vegetarian diet as a method of losing and controlling weight. It is possible that they 'use' vegetarianism to legitimize food avoidance and extend the range of avoided foods [72]. Meat avoidance for the purpose of weight control may have a rational justification. Studies show that vegetarians are slimmer and have a lower body mass index (BMI) than meat-eaters (e.g., [73,74]).

On the other hand, studies by Piazza and colleagues [30] on the beliefs about meat consumption show that the common rationalizations which people use to defend their choice to eat meat are that meat is Nice, Natural, Necessary and Normal ('the 4Ns'). The study showed that men endorsed the 4Ns more strongly than women did. The differences were significant, particularly in the Nice and Normal aspects. Those rationalizations may help omnivores cope with the dissonance caused by eating meat and the ethical implications of doing so. The higher frequency of relying on such rationalizations in men may go some way towards explaining the higher level of meat consumption in that group. Men have a more negative attitude towards the vegetarian diet also when it comes to the taste of vegetarian dishes [75]. Men more often than women believe that they will not enjoy the taste of vegetarian meals, which becomes another obstacle to switching to vegetarianism. What is more, qualitative research shows that men are skeptical about the health aspects of different foods, and that they perceive 'healthy foods' as unappealing and of low nutritional value [76]. At the same time, men associate a 'healthy diet' with eating meat [77].

4.2. Vegan/Vegetarian Diet as an Ethical Choice

Apart from the health benefits, ethical concerns may also be linked to meat avoidance. A study by Lea and Worsley [78] shows that animal welfare is related to the apparent interest in vegetarianism, particularly among women. In addition, compared with men, women more often declare that animal welfare is an important factor they consider when making food choices [77]. Kalof and colleagues [79] proved that altruism has a significant positive effect on vegetarianism when the demographics are controlled. What is more, altruistic values increase beliefs that vegetarianism is beneficial to health, the natural environment and the welfare of farm animals. Moreover, the results of this study also show that women believe that vegetarianism helps prevent cruelty to farm animals. Considering that empathy is a trait which is valued more by women than by men [80], it may be hypothesized that the strong disproportion in the number of vegetarian and vegan men and women is linked to women's higher level of empathy towards animals (cf. [81]).

In the general population, women have been found to be more concerned about animal rights [82] and ethics, representing around 75% of animal activists [83]. Moreover, women are more likely than men to favor increased restrictions on animal use and are more concerned than men about the suffering inflicted on laboratory animals [84]; they also generally have a more positive attitude towards animals [85]. These differences can be explained by the theory of moral development and its application to gender differences [86]. Socialization generally makes women more appreciative of the role of nurturer and caretaker, while men emphasize work and competition. Kellert and Berry [87] therefore concluded that women and their behaviors and beliefs towards animals, as well as their higher level of compassion and lower level of aggression, reflect stronger moral attachment, also to domesticated animals and other living beings. These factors may go some way towards explaining the prevalence of women among vegans and vegetarians. However, studies on vegetarians' motivations are not consistent. Haverstock and Forgays [88] found no gender-specific differences between individuals supporting animal rights and their political affiliation.

Diaz [89] attempted to explain the inter-sex differences in motivations using a relational and predictive approach. His study analyzed the predictive power of attachment to animals, the perception of animal minds and moral status and traits attributed to animals in terms of willingness to become vegetarian. Among women, there was a closer correlation between human-like animal attributes. These include variables such as believing that animals are conscious and that animals can experience pain or emotions. Apart from the fact that, for women, all components on this scale correlated more strongly with each other, they also correlated more strongly than for men with attitudes towards the use of animals (i.e., the use of animals in different areas such as food production, entertainment, work). The strongest correlation observed in women was between how much animals should be considered from a moral perspective and the aversion to using animals in medical experiments. However, the authors have not found inter-sex differences in terms of predictive value when predicting the willingness to become a vegetarian. Nevertheless, the analyses mentioned above indicate differences in the moral perception of animals and how they are influenced by the different human traits attributed to animals. Further research is needed to investigate and clarify the relationship between the variables mentioned and to discover how inter-sex differences can affect them and, as a result, how this may translate into a specific change of behavior, e.g., switching to vegetarianism.

Another study [20] used a cluster analysis to create consumer segmentation of vegetarians and meat-eaters. This segmentation was based on specific behaviors, such as the desire to consume different types of food (meat, vegetables, etc.), but also psychological and demographic characteristics. The purpose of this type of segmentation was to present a wide range of consumers in order to understand the differences and similarities between the segments. Vegetarians can differ not only from meat-eaters, but also from other vegetarians (e.g., in terms of how important ecology or ethics are for them). After the cluster analysis was completed, five segments were identified: Compliant Carefrees (conformists not interested in the environment, animals, nutrition), Conservative Meatarians, Socially Conscious Vegetarians (focused on animal welfare), Educated Healthy Eaters (focused mostly

on nutrition and health) and Individualistic Meatarians. The analysis showed that women dominate both in the Socially Conscious vegetarian segment, characterized by concerns for the environment and animal rights, and Educated Healthy Eaters, for whom such issues are not relevant but who care primarily about health issues. Critical Thinkers is a male-dominated segment, comprising men whose dietary choices are guided mainly by logical arguments. This group comprised meat-eaters and vegetarians, but men represented the majority in the two Meatarians groups (Individualistic Meatarians and Conservative Meatarians). This division into consumer segments, together with their gendered representations, may allow for marketing and advertising messages to specific consumer groups by taking into account the gender and values represented by the respective segment. This enables targeted efforts relating to health, ethics or individualism to be addressed to the relevant group.

Gender differences manifest themselves, not only in the frequency of adopting a vegetarian diet, but also in maintaining it for a longer period. As shown in a study conducted by Rosenfeld [11], women vegetarians are more socially motivated to adhere to their diet and less likely to break its rules. However, the mechanisms underlying these differences have yet to be examined.

The difficulty of examining gender and motivation is mainly due to the fact that the motivation to be on a vegetarian diet is a complex phenomenon in its own right. For a long time, the main division line was thought to run along two main motivations: ethical issues and health concerns [62,90,91], but there are many other reasons why someone may choose not to eat meat (e.g., religion, concern for the environment, conformity, influence of others, e.g., parents). Moreover, ethical motivations alone are not consistent with each other and may derive from a variety of reasons and be based on the refusal to take the life of a living being, on the equalization of animals and humans or on reluctance to cause suffering to other beings. In addition, motivations may overlap or vary over time, so it is hard to determine which one was predominant when the change of diet occurred.

4.3. Veganism/Vegetarianism and Mental Health

Literature suggests that a plant-based diet may influence mood and mental health and that gender can be a moderator of that link. A study on the relationship between perceived stress and anxiety among vegetarians, vegans, and meat-eaters showed that a significantly lower anxiety score was reported among male vegetarians and vegans when compared to omnivores, while women vegans showed a lower level of stress [92]. It may suggest that a meat-free diet (or even a reduction in meat consumption) is associated with better mood (but see [93]). Vegetarian diets are typically rich in fruit and other antioxidant-rich foods, which are also linked to positive mood [94].

Gender differences were observed in a study conducted in Iran [95] that investigated, among other things, the level of happiness (measured by the Oxford Happiness Questionnaire) of vegetarians and non-vegetarians. The results showed higher levels of happiness in vegetarian women than in vegetarian men. This result may be linked to the generally negative social perception of men who follow a vegetarian diet [35,96], as well as to the more frequent experiences of rejection and mockery. These factors, as noted by Torti [43], can affect their well-being and thus their reported happiness levels.

Other studies (e.g., [97]), however, show that vegetarians are more likely to be dissatisfied with their body and weight, and male vegetarians are particularly vulnerable to unhealthy weight control practices. Research by Perry and colleagues [97] indicates that vegetarian men seem to be more body-conscious than non-vegetarian men; they are significantly more likely to weigh themselves frequently, to engage in healthy and unhealthy weight control behaviors, and to report vomiting as a weight control method. It seems that vegetarian men are as likely to engage in all of the same behaviors to control food intake as their female peers, whereas non-vegetarian men are less likely to do so than non-vegetarian women and vegetarian men. This is an important result, as research usually shows that women are more likely to engage in unhealthy eating practices and are more likely to limit and control what they eat. This paradox may be explained by the fact that male vegetarians are often under-represented in research samples, especially in the case of research on healthy and unhealthy eating practices, which are commonly associated with women (e.g., [98–100]). Therefore,

the differences between sex, vegetarianism and unhealthy eating practices in this group were difficult to observe.

What is more, vegetarian men had higher depression scores than non-vegetarian men [101]. As pointed out by Matta and her colleagues [102], it is not vegetarianism itself that causes depressive symptoms, but the exclusion of an important component from the diet (not necessarily meat). This effect may result from nutritional deficiencies (vegetarians have a lower intake of omega-3 HUFAs, vitamin B12 and folate, associated with the risk of depression [103]). However, the authors do not rule out the possibility that for some vegetarians their diet may not be an ethical or a health-related choice, but rather a marker of already existing problems (eating disorders or depression).

Results of studies of mental disorders, including depression, vegetarianism and sex/gender differences are not consistent. It remains to be clarified whether the results are due to real differences or methodological limitations. It can be concluded that male vegetarians may have greater psychological problems related to their vegetarianism, resulting from greater social rejection and exclusion, as they fail to meet the socially accepted standards. In addition, studies on other meat-limiting diets (such as the Mediterranean diet) show that the differences in depressive symptoms between those who follow such diets and those who do not are found when comparing men, not women [104]. On the other hand, women are more likely to develop eating disorders and dissatisfaction with their own bodies, which may also be associated with depressive symptoms. In this case, vegetarianism may be a response to these disorders or to some of them. In addition, women generally experience more depressive symptoms than men [105]. Another aspect is the biological issues and deficiencies resulting from the exclusion of various types of ingredients from the diet, which can also affect the person's mood. Further research is needed to clarify this relationship, taking into account sex/gender, motivation and a number of other factors that may moderate the occurrence of depressive symptoms among vegetarians. Especially as—contrary to common beliefs—a recent meta-analysis shows that people who avoid meat run a higher risk of depression, anxiety and related behaviors [93].

5. Concluding Remarks and Paths for Future Research

Although in Western societies eating meat has lately been more and more criticised due to health-related, environmental or humanitarian concerns, many people believe that meat is a desirable element of their diet, and they rarely switch to the vegetarian or vegan diet. One of the reasons for the continuing popularity of meat involves cultural factors linked to a specific social group's attitude to switching to a new diet. These aspects are difficult to study, especially as they themselves (and their significance) seem to vary according to sex and gender roles.

Research on the social consequences of following a vegetarian diet is all relatively recent. However, the inter-sex differences shown in the studies reviewed in this paper appear to be significant and meaningful. It is not clear what part of culture-specific factors—on the one hand—and the biological differences between the sexes—on the other—play in that phenomenon. The differences in dietary preferences between men and women may result from different dietary requirements of both sexes. For men, meat consumption may have a specific nutritional value (e.g., [106–108]). Women, on the other hand, may need a plant-based diet, which is high in specific carbohydrates responsible for the storage of excess energy as fat (e.g., [109–111]). At the same time, women's lower preference for meat may also be linked to the specific period of gestation (e.g., [112,113]). These hypotheses, however, require further systematic research before they can be confirmed or disclaimed.

Cultural factors resulting in specific attitudes towards vegetarians and their motivations to follow a meatless diet may differ from one community to another. Although in the Western world the dominant model is still one in which meat consumption is linked to wealth, high social status and dominance (e.g., [38]), these factors may be more or less significant depending on the country or an individual's socioeconomic situation or age. As pointed out by De Backer et al. [45], even within same-sex groups, there are sub-groups with non-traditional attitudes to sustainable diets. These social dynamics should be reflected in future research design.

It is also important to examine the role played by the development of food preferences and eating habits from the earliest stages of life. Food preferences are shaped already at the prenatal stage of development [114], and the process continues at the weaning stage, when the child is introduced to flavors and odors in the mother's milk, in her breath and smell [115]. The variety of flavors and odors available to the infant influences the child's tolerance for new foods in later life. Unfamiliar foods are not readily accepted, and their initial intake is significantly lower than the intake of familiar foods (food neophobia [116,117]). In this regard, it is also important to analyze the psychological obstacles to changing one's diet (e.g., [31]). It cannot be ruled out that inter-sex differences will be observed also in this context, especially given the different socialization patterns for men and women, including the different periods in which individuals' preferences are influenced by their male and female guardians.

All these aspects must be considered when preparing campaigns to decrease meat consumption and promote sustainable nutritional styles in society at large. It seems that one of the key issues in effective campaigns promoting plant-based food is the differences between men's and women's attitudes to veganism/vegetarianism. Failing to take into account those widespread and relatively stable differences may hinder the effectiveness of such efforts.

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