Meat Reduction by Force: The Case of "Meatless Monday" in the Norwegian Armed Forces

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Abstract: Despite the scientific evidence that more plants and less animal-based food is more sustainable, policy interventions to reduce meat consumption are scarce. However, campaigns for meat free days in school and office canteens have spread globally over the last years. In this paper, we look at the Norwegian Armed Forces' attempt to introduce the Meatless Monday campaign in their camps, and we evaluate the implementation process as well as the effect of the campaign on soldiers. Qualitative interviews with military staff indicate that lack of conviction about benefits of meat reduction, and the fact that kitchen staff did not feel ownership to the project, partly explain why vegetarian measures were not fully implemented in all the camps. A multivariate regression analysis with survey data from soldiers indicate that those who have experienced meat free days in the military kitchen are more prone to claim that joining the military has given them a more positive view on vegetarian food. Furthermore, the survey gives evidence that stated willingness to eat more vegetarian food is higher among soldiers who believe in the environmental and health benefits of meat reduction.

Keywords: sustainable diets; meat reduction; Meatless Monday; policy implementation; attitudes to vegetarian food; multivariate regression analysis

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1. Introduction

Food production is one of the main causes for environmental degradation in terms of deforestation, loss of biodiversity, water scarcity and pollution of water and air, in addition to greenhouse gas emissions [1–4]. In general, food from animal production has a more negative environmental impact than plant-based food, since it requires more resources per kilo of food produced, and since ruminant animals emit the greenhouse gas methane [5,6]. In order to reduce the negative environmental impact from food consumption and production, there is a call for a change in diets towards less meat and more plant-based food [7–9]. Such a dietary change could also be positive for public health, as meat consumption has been found to increase the risk of cardiovascular diseases and strokes [10,11], and several types of cancer [11–14].

The numerous studies reaching similar conclusions on the climatic, environmental and health benefits of moving towards more plant-based diets provide a strong scientific evidence which should leave few people in doubt about the advantages of such a dietary change. However, there are few signs of any large-scale dietary change taking place towards more plant-based foods. In many developing countries, meat consumption is on the rise, while in high-income countries the consumption is flattening out, but not going down [15]. Hence, consumer behaviour towards meat do not seem to be changing substantially, and it seems like interventions from public authorities are necessary to bring about the dietary changes that both environmental and health scientists call for.

But so far, there are few examples of interventions for reduced meat consumption, neither by public authorities or non-governmental organisations (NGOs) [16–18]. This is also the case in Norway [19,20]. However, in 2013, the Norwegian Armed Forces took the initiative to introduce "Meatless Monday" (Kjøttfri Mandag) in their kitchens. Meatless Monday is a rare example of a global meat reduction campaign. The Meatless Monday campaign was launched by Johns Hopkins' Bloomberg School of Public Health in 2003 and addresses the unsustainable level of meat consumption by promoting one meat free day a week. The campaign is run by NGOs in various countries, making both private-owned restaurants, universities, schools and other public canteens institute meat-free days [21]. The campaign also aims to change attitudes by spreading information about the sustainability advantages of meat reduction. But meat free days are not always easy to implement. The campaign has caused debate and protests, usually with reference to freedom of choice [22].

There are few academic studies which narrates experiences with meat reduction interventions, such as Meatless Monday. Such experiences are important as learning arenas for those who want to take similar initiatives, and the aim of this paper is to make a contribution by investigating the case of Meatless Monday in the Norwegian Armed Forces. With this approach, it is possible to gain knowledge on two important aspects: The implementation process of a meat reduction campaign, and people, in this case the soldiers', reaction to it.

As will be shown, the Meatless Monday campaign was met with resistance within the military, and as a result only a few military kitchens started serving vegetarian meals, whereas the majority continued to serve the same food as before. In this paper, we first investigate qualitatively the reasons why it was difficult to implement Meatless Mondays in the Norwegian Armed Forces. Secondly, with quantitative survey data from soldiers, we investigate their attitudes to meat-free meals, and particularly the impact of Meatless Monday measures on these attitudes. The fact that the chefs did not introduce meat reduction measures in every camp provides an opportunity to investigate if there was any difference in attitudes among the soldiers who had been exposed to vegetarian food, compared to those who were not.

2. Challenges to Introducing Vegetarian Food

The case of Meatless Monday in the Norwegian Armed Forces can give insight into the question as to why it is difficult to facilitate change towards more plant-based diets, at an institutional as well as at an individual level. Considering the institutional level first, it is noteworthy that public authorities in most countries have so far hardly addressed reduction of animal products as a climate mitigation strategy [16–18]. There are several hypotheses that can explain this. It could be that public authorities consider it at best too complex a challenge, at worst it risks a backlash, in the sense that it could leave people even more negative than before [16,18]. This again could be linked with the fact that meat consumption has strong traditional roots in many cultures [23,24]. Another reason why the implementation of meat reduction measures at institutional level is challenging, could be that scientific results about environmental benefits of meat reduction have not been generally accepted, including by public authorities. One explanation to this is that the links between meat consumption and climate change may be somewhat too complex, as they involve an understanding of issues such as fertilizer use and methane emissions [10]. In Norway, there do not seem to be consensus in the public debate on what constitutes sustainable production and consumption of meat, and climate change issues get mixed up with issues of food security and maintenance of the cultural landscape through grazing [19,25,26].

The Meatless Monday campaign is an example of a meat-reducing intervention at an institutional level, which has already been tried out. Implementing it in the Norwegian Armed Forces could efficiently force the soldiers to reduce their meat intake, since meat is taken away as an option. However, such an intervention can also have an effect at the individual level, by influencing attitudes. Through Meatless Monday, soldiers get to know what vegetarian food is by actually tasting it, and in that sense, it is a way of providing information and familiarizing soldiers with vegetarian food. Previous studies have shown that knowledge plays an important role when it comes to meat reduction. Studies show

that unwillingness to reduce meat consumption is associated with the belief that a plant-based diet would not provide sufficient proteins, and consequently lead to nutrition deficiency [27]. Studies also find that those who are aware of the climate impact of meat production, are more likely to be willing to reduce their meat intake [18,28–31]. Furthermore, research shows that people underestimate the environmental benefits from reduced meat consumption [18,29,32–34]. However, studies looking at the provision of information and willingness to accept more plant-based food have only been able to find small effects [35,36].

Another possible function of introducing Meatless Monday in the military is that soldiers get to eat vegetarian food in a social context, and seeing others taking pleasure in eating vegetarian food may create more positive attitudes. However, such interventions may also backlash, for instance if they feel their freedom of choosing what to eat is taken away from them, or their fellow soldiers dislike the dish. Research of the last decades show that food choices in general are complex, and they are not determined by a single factor, but by many motivations [37]. Food choices may be influenced by attitudes and perceived behavioural control [38], cultural norms and habits [39], social contexts [40], and time pressure and values [41]. Consumers have several barriers to eating less meat, including taste and enjoyment of meat, family food preferences or poor knowledge of alternatives to meat [27,42,43]. The decision to eat or avoid meat is also intertwined with psychological factors [44] and identity [45]. Meat plays a central role in the Western diet, and it is associated with ideas of power and masculinity [34,46]. These last aspects may explain why the Armed Forces, where power and masculinity have a stronger value than elsewhere in society, could be a particularly challenging setting for introducing vegetarian food [47].

Previous studies have also found that demographic factors seem to influence the acceptance of vegetarian diets. Women are more likely than men to choose a diet containing more plants and less meat [28,32,36], and people from urban populations eat less meat and are more prone to be vegetarian than people from rural areas [48,49].

Thus, experiences from previous studies indicate that introducing Meatless Monday in the Norwegian Armed Forces will be met with challenges, both at the institutional and individual level. Because of negative attitudes and lack of knowledge, a strong type of intervention such as Meatless Monday could in the worst case create more negative than positive attitudes towards vegetarian food.

In this study, we use results from qualitative interviews with military staff and a multivariate regression analysis with survey data from soldiers to study the experiences with meat-free days in the Norwegian Armed Forces. In the following, we outline the methods and results from the two parallel data collections.

3. Implementation of Meatless Monday in the Norwegian Armed Forces

In November 2013, the largest newspaper in Norway announced that the Norwegian Armed Forces would introduce Meatless Mondays in their military kitchens. The Armed Forces stated that the impetus for introducing a vegetarian day was to demonstrate their commitment to environmental sustainability, to meet recommendations for public procurement and health concerns, as well as to reflect societal trends. In this paper, we will present the results of a qualitative study of the implementation process for this campaign, and how it performed.

3.1. Methods Qualitative Study

Ten in-depth interviews were performed with three categories of military staff between October and November 2014; (1) chefs: two heads of kitchens in charge of daily operations and procurement; (2) cooks: five cooks from two different military camps; and (3) decision makers: two nutritionists and one director from the military logistics organization (representing the decision makers within procurement). Recruiting was done through snowball sampling. The interviews lasted from 45–90 min, and were recorded, transcribed and analysed thematically [50,51]. The interviews were guided by a set of questions addressed by the interviewer, and followed a loose structure, for example: *Are you familiar*

with the Meatless Monday campaign? Do you prepare vegetarian food at work or at home? What does sustainable food consumption mean to you? Staff gave insight into their experience with Meatless Monday and their knowledge of the connection between meat, the environment and climate change. In addition to the in-depth interviews, brief interviews with chefs from 20 military kitchens throughout the country were performed by telephone between January and April 2015. The chefs were asked questions about what measures they had taken to meet the request about reducing meat consumption. We organised the data thematically by using colour codes that referred to the different topics [51]. The topics the participants emphasised during the interviews were: relevance of targeting meat, knowledge, decision-making processes and soldiers' attitudes. We clustered our results from the qualitative study in three main categories: knowledge barriers, implementation challenges and attitudinal barriers.

3.2. Results Qualitative Study

The qualitative study reveals that the initiative to implement Meatless Monday came from a small number of nutritionists working in the Catering Management section of the Norwegian Armed Forces. The overall goal of the initiative was to reduce the total amount of meat consumed. But by addressing this issue through an already established international campaign such as Meatless Monday, the nutritionists also wanted soldiers and staff to learn more about sustainable food consumption, with reference to one of the objectives of the mandatory military service: the formation of moral and ethical values. The military service is often the soldiers' step between the family household and living away from home. Here, there is potential for the Armed Forces to foster positive attitudes towards more sustainable and healthy behaviour, such as eating less meat. The meat reduction project was a continuation of their efforts to make their kitchens more sustainable, following initiatives for organic food procurement and reducing food waste. However, there were problems with the implementation of Meatless Monday, and it never actually became what can be termed a "campaign".

Firstly, a major barrier was lack of knowledge sharing ahead of the implementation. Information about the environmental and health benefits of reduced meat consumption was not given in organised, well-prepared manners. Hence, at the time of interviews, there were both decision makers and kitchen chefs who did not see meat reduction as an important sustainability measure. For example, the decision maker said he did not find it appropriate behaviour for a neutral public institution like the military to endorse statements from certain NGOs and political parties, meaning that the benefits of meat reduction were perceived as normative viewpoints. In addition, chefs and decision makers seemed to think that the environmental footprint of the soldier's food procurement play a minor role compared to other military activities. One chef argued:

"When they drive around in the woods with tanks, it is not exactly climate friendly fuel they run on (. . .) and the military aircrafts and the noise they make, *then* they can talk about the environment and pollution. (. . .) we are environmental culprits when you think about the bullets and gunpowder (. . .)" Interview Q – chef

Also, the military deals with war, terrorism and weapons, and the issue of sustainable diets could seem less important to "fight for". Referring to the Meatless Monday project, and in contrast to other military tasks, the decision maker stated that it was "not about life or death". Such perceptions may be part of the explanation why the project was not implemented in the manner one could expect in the military: by *orders*. Instead the official communication where chefs were asked to reduce meat in their kitchens was formulated as a *request*. The request presented three possible alternatives on how to reduce the consumption of meat, which were: one regular meat-free day per week; meat-free meals several times a week; or, less meat in the served dishes. Apart from the letter with this request, the decision makers did not provide any information to chefs, cooks or soldiers about the Meatless Monday initiative.

Another reason why Meatless Monday was not formulated as an order was that many chefs expressed their discontent with the project in meetings with the decision makers. Some chefs explained that they were reluctant because of the way they first learned about the project: through the newspaper.

This procedure demonstrated that they were not involved in the decision, and consequently many viewed the initiative as a top-down decision. One chef argued:

"If you really want to anchor it, you should talk to the right people, and not go through the media. Now I feel like it is something someone wants to force down my throat" Interview Q – chef

Furthermore, chefs and cooks did not receive training or information on how to cook vegetarian meals. Few chefs and cooks had experience with cooking or eating vegetarian food, and many were sceptical towards its taste and nutritional value. A cook explained that he had observed how a colleague made vegetarian lasagna almost without spices. The cook had the impression that many colleagues were not familiar with preparing vegetarian food, and that they automatically thought it would be something abnormal, prepared without normal ingredients such as pepper, salt and spices. There was an assumption that *vegetarian* means boring or less tasty—food made with restrictions. Had the chefs' and cooks' lack of experience with preparing tasty and nutritious vegetarian food been addressed, the implementation of the project would perhaps have been more effective. Although effort was made to avoid a top-down implementation through giving individual kitchens flexibility to define their own approach to reduce meat consumption, chefs felt overruled. The experiences from the chefs indicate that the top-down characteristic of the implementation evoked resistance.

Staff argued that soldiers' negative attitudes towards vegetarian food made them sceptical to the initiative. The chefs and cooks wish to serve the soldiers food that they want. And the soldiers want meat. Some of the chefs believed that announcing vegetarian meals would make the soldiers turn away from the military kitchen and instead eat at the fast food restaurant also located at the camp. The soldiers' skepticism was confirmed in an empirical study [47,52]. Through focus group interviews with soldiers, it was found that the soldiers indeed were reluctant to reduce their meat intake, and that the military mentality enforces the need for meat, as soldiers need to stay strong and need the motivation of a warm, filling meal. Soldiers associated meat with power, protein, masculinity, comfort and reward. Also, soldiers thought that meat is the sole source for protein and did not believe that vegetarian food could provide adequate nutrition.

Staff also pointed out that the younger cooks were generally more positive towards the initiative. One cook said that especially in kitchens where cooks were older, they were not willing to test Meatless Mondays:

"They have always done it in a certain way, and therefore want to continue their normal routines. In this kitchen the cooks are rather young, and we like trying new things" Interview X–cook

In the end, it was left to the chefs to decide whether or not to implement Meatless Monday measures. Of the 20 different kitchens where chefs were interviewed, seven had made some changes to their menus due to the Meatless Monday initiative. Five of these had provided information about the meat reduction measures to the soldiers, and in most cases, this was given orally as a brief orientation to the soldiers. Some chefs said they had received negative feedback from the soldiers, that there was more food waste after vegetarian meals, and they had therefore ended the project. Others were still serving vegetarian dishes regularly and reported that soldiers were displaying positive attitudes. Some of those who did not receive negative reactions had used meat substitutes and removed the word "vegetarian" from the menu. Many soldiers, therefore, did not know they were eating vegetarian food.

4. Soldier Attitudes to Vegetarian Food

Although the implementation of Meatless Monday did not go as planned, vegetarian measures were still implemented in a number of camps, which means that some soldiers were exposed to vegetarian food, others were not. This makes it possible to analyse econometrically if being served vegetarian food had a positive or negative effect on the soldiers' attitudes.

4.1. Methods Quantitative Study

A quantitative survey was performed among the entire population of soldiers doing their national service in all the military camps in Norway from November 2014 to February 2015. The data used

for this study is part of a larger survey on the soldiers' satisfaction with the food and military kitchens. Questionnaires were printed on paper and distributed and collected during meals by a soldier representative—point of contact between the soldiers and the political and military leadership in the Armed Forces, assisting the leadership with their day-to-day problem solving and responsibilities—at each camp. Participation was not mandatory and answers were anonymous. Of the approximately 9000 soldiers that at any time should be enrolled, 2848 responses were received, which gives a response rate of 32%. The response rate from each camp varied a lot, from 9% to 70%, which proves that other factors than the soldiers' willingness to answer have had an influence. For instance, due to logistical problems, some soldier representatives did not receive the questionnaires, and in some camps the soldiers were given more time to answer than in others. This means that there was a complex set of factors that biased response by some soldiers more than others.

The majority of the respondents were between 18 and 21 years old. Among the answers, 2288 were from male and 560 (20%) from female soldiers. The percentage of female soldiers in the Norwegian Armed Forces in 2015 was 17% [53]. Not all the respondents had answered all the questions in the questionnaire. We have no information about the respondents, apart from their answers to the questionnaire. The collecting and scanning of questionnaires was done by The Norwegian Defense Logistic Organisation and the marked analysis bureau TNS Gallup. We received the complete data set with all questions and coded variables.

These data can be used to investigate factors that influence soldiers' attitudes to vegetarian food, and if being served vegetarian food had a positive or negative effect on the soldiers' attitudes. As explained, it was not random but left to the chefs to decide if they wanted to make vegetarian changes to the menus or not. However, according to military staff, previous surveys has not shown significant differences between the attitudes of soldiers in camps where menu changes were made, and those where they were not. Hence, although the setting is not equivalent to an experiment where there is a baseline study, a treatment, and a control group, the analysis can still provide valuable insight.

We perform an ordinary least square (OLS) regression analysis, using the software Stata. We run two regression analyses where we estimate the effect of a range of different factors on two different dependent variables. One is the extent to which soldiers believe joining the military has made them more positive to vegetarian food, measured by the following question: "To what extent do you agree with the statement: "I have gotten a more positive view on vegetarian food after joining the military". The other dependent variable is to what extent they think they will choose to eat vegetarian dinners when they move to their own residence, measured by the extent to which they agree with the statement: "When I move into my own residence I will choose to eat dinner without meat or fish once or twice a week". Answers ranged from 1: "Strongly disagree" to 6: "Strongly agree".

4.2. Results Quantitative Study

4.2.1. Summary Statistics

Several other factors may potentially influence positive attitudes to vegetarian food. In our analysis, we have included gender and population density at place of origin, which indicates whether the soldiers come from a rural or urban area. We have also included variables depicting the soldiers' agreement with the following statements: "Reducing meat consumption is an efficient environmental measure", "A high level of meat consumption is harmful to health", "A well-balanced vegetarian diet contains all the nutrients the body needs" and "Animal welfare is important to me". These variables describe certain characteristics of the soldiers.

The distributions in percentage of the responses to the statements are shown in Figure 1. The number of answers per question can be found in Table 1.
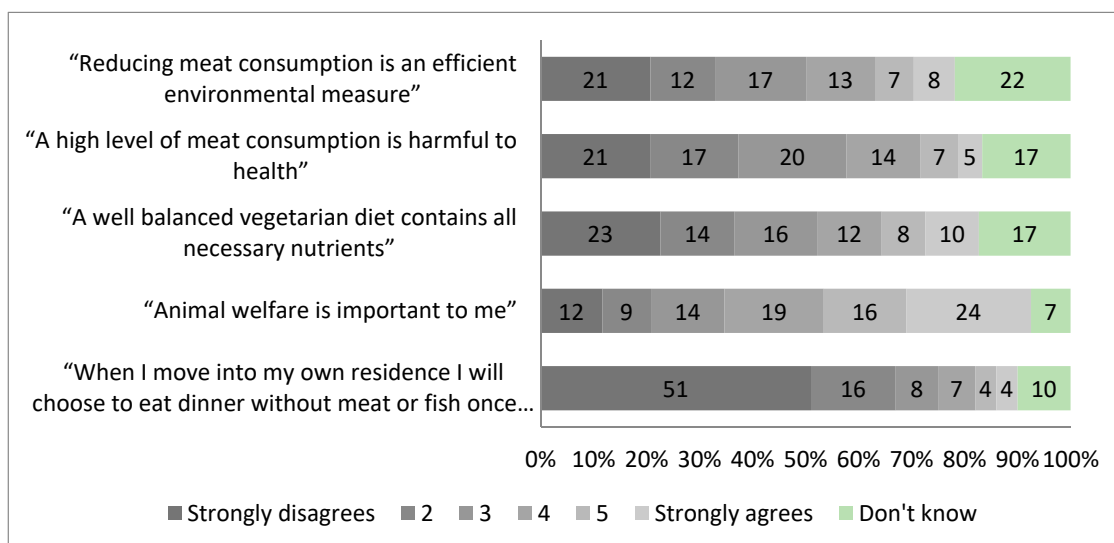
Figure 1. Distribution of answers to statements related to meat and vegetarian food.

Table 1. Summary statistics.

Variable	N	Mean	Std. Dev.	Min	Max
Will choose vegetarian in the future	2266	−1.8	1.8	−3	3
More positive to vegetarian with military	2113	−1.9	1.5	−3	3
Belief is meat harmful to the environment	1955	−0.7	2.1	−3	3
Positive attitude to animal welfare	2294	0.6	2.1	−3	3
Belief meat is harmful to health	2084	−0.9	1.9	−3	3
Belief vegetarian diet is nutritious	2036	−0.6	2.1	−3	3
Preference for meat or fish	2406	1.7	1.7	−3	3
Meat free day exposure	2848	0.1	0.3	0	1
Female	2848	0.2	0.4	0	1
Population density at place of origin	2589	2.5	1.3	1	5

The extent to which a soldier agrees with the statement, "Reducing meat consumption is an efficient environmental measure" tells us something about his or her level of knowledge about the environmental impact of meat consumption. Twenty-one percent of the respondents strongly disagree with the statement, which can be interpreted as them believing firmly that such a relationship between meat consumption and greenhouse gas emissions does not exist. Only 8% strongly agree with the statement. Likewise, the variable, "a high level of meat consumption is harmful to health" indicates the soldiers' knowledge about, or belief in, the negative health effects of a high level of meat consumption. Here, 21% seem to have a firm conviction that there are no health dangers associated with a high level of meat consumption, and only 5% strongly agree with the statement.

Even more respondents (23%) strongly disagree with the statement, "A well balanced vegetarian diet contains all the nutrients the body needs". The variable, "animal welfare is important to me", exposes more about the attitudes and values of the respondents, and less about his or her level of knowledge, than the other statements. Interestingly, this is a statement that many more agree to, and only 12% strongly disagree. This indicates that the soldiers to some extent are concerned about animal sufferings. Despite this, they are reluctance to eat food without animals: Only 4% believe firmly that they will voluntarily eat vegetarian dinners once or twice a week in the future.

Table 1 shows the summary statistics for the variables included in the regression analysis.

In the table, the degree to which the respondents agree with the different statements, are given the values −3, −2, −1, 1, 2 and 3. The more they agree with the statement, the higher the value.

The variable, "Meat free day exposure" is based on telephone interviews with military kitchens and is given the value 1 if the kitchen at a camp had implemented a meat-free day measure, and 0 if

not. This applies to approximately 10% of the soldiers who answered the survey. The alternatives for population density were either: large city (more than 50.000 inhabitants), medium large city (15.000–49.999 inhabitants), small town (5.000–14.999 inhabitants), community in rural municipality or sparsely populated area. They were given values from 1 (large city) to 5 (community in rural municipality).

4.2.2. Results Regression Analysis

We use these data in an ordinary least square (OLS) analysis, where willingness to eat vegetarian food in the future is the dependent variable. The results are seen in Table 2. The standard errors are presented in parenthesis below the coefficients.

Table 2. Results regression analysis.

Variable Name	Specification 1: Will Choose Vegetarian in the Future	Specification 2: More Positive to Vegetarian After Joining Military
Belief meat harmful for environment	0.17 ***	0.07 °
	(0.04)	(0.04)
Positive attitude to animal welfare	0.07 **	0.02
	(0.02)	(0.02)
Belief meat harmful to health	0.2 ***	0.13 **
	(0.02)	(0.03)
Belief vegetarian diet is nutritious	0.15 ***	0.12 ***
	(0.03)	(0.02)
Preference for meat or fish	−0.27 ***	−0.03
	(0.02)	(0.02)
Meat free day exposure	0.05	0.31 °
	(0.1)	(0.17)
Female	0.12	−0.3 **
	(0.11)	(0.09)
Population density at place of origin	−0.05 **	0.04
	(0.03)	(0.03)
Constant	−0.78 ***	−1.66 ***
	(0.63)	(0.08)
R^2	0.37	0.12
N	1343	1291

Significance levels: '***' denotes $p < 0.001$, '**' < 0.01, '*' < 0.05, '°' < 0.1.

Concerning the first specification, where the dependent variable is the soldiers' belief that they will choose to eat vegetarian food in the future, the results show that all the independent variables describing the respondents' level of knowledge or attitudes have the expected correlation with the dependent variable. The more the soldiers believe that reducing meat consumption is an efficient environmental measure, or that a high level of meat consumption is harmful to health, or that a well-balanced vegetarian diet contains all necessary nutrients, the more prone they are to state that they will choose vegetarian dinners once or twice a week in the future. However, being concerned about animal welfare has a low level of correlation with willingness to eat vegetarian compared with the other independent variables with the same scale.

Not surprisingly, the more the soldiers agree that dinner tastes better with fish and meat, the less likely they are to say they want to eat vegetarian in the future. The results also indicate that soldiers from more rural areas are less likely to see themselves eating vegetarian in the future, confirming results from previous studies [49].

There is a positive, but not significant correlation with the variable measuring whether or not the camp where the soldier was situated had implemented a Meatless Monday scheme. There is also no significant correlation with age or gender. However, when running the regression without the attitude

variables, we do find a positive correlation between being female and wanting to eat vegetarian in the future. This indicates that individual attitudes are more important than gender in itself.

Comparing these results with the specification where the dependent variable measures to what extent the soldiers have become more positive to vegetarian food after joining the military, we see a lower overall fit for the specification, with an R-squared of 0.12, compared to 0.37 for the first specification. There is a positive correlation between having had Meatless Monday measures at the camp and having become more positive to vegetarian food, which indicates that exposing soldiers to vegetarian food have created more positive attitudes. Compared with the first specification, there is a weaker correlation with the knowledge and attitude variables. This is as expected, as the two dependent variables measure different things. The first one, willingness to eat vegetarian in the future, measures a personal attitude that is relatively stable, while the other one measures if the soldiers had a change of attitude during their stay in the military, which is influenced by different factors.

Interestingly, there is a significant negative correlation with the gender variable, indicating that women to a less extent than men have become more positive to vegetarian food. The explanation could be that women to a higher extent than men already have a positive attitude to vegetarian food before joining the military.

The low number of observations compared to the total number of respondents is due both to the high number of "Do not know" answers to many questions, and to unanswered questions for some respondents. The same regressions were also performed giving "Do not know" answers a 0-value, but although in general the results were similar, the overall fit was slightly worse and significance slightly lower.

5. Discussion

In order to make people shift their diets towards more plant-based foods, interventions can be made at different levels. The first level is providing information, and there are many examples of public information campaigns aiming for increased consumption of plant-based foods for health reasons [54], as well as some national dietary guidelines, which in various ways are aiming for (red) meat reduction [55]. A stronger type of intervention is to provide more plant-based food, for instance by offering fruits and vegetables as snacks in schools [54]. Improving the attractiveness and availability of meat replacement products, such as vegetarian burgers, is another possibility [56]. Changing prices of foods according to their climate emission level is another, stronger type of intervention, but such measures have not yet been implemented in any country. Another option is to use so-called "nudging", or choice architecture. This implies making small changes in product placement or information provision in for instance supermarkets or canteens, in order to nudge people into making choices that are more beneficial to themselves or society at large [57].

The strongest measures are those that restrict or eliminate the availability of meat. This is where we could place interventions such as the Meatless Monday campaign. The fact that it is a strong type of intervention, interfering with people's choices, could be part of the explanation to why it was difficult to implement in the Norwegian Armed Forces. Another explanation is a general lack of conviction about the effectiveness of meat reduction as a climate mitigation measure, and prejudices towards vegetarian food, which probably had the effect of reducing the incentives for decision makers in the military to force through the implementation of the project.

Furthermore, as the decision makers did not give kitchen chefs thorough information about and ownership to the project, the chefs' incentives and possibilities to implement it were reduced. It can also be discussed whether the media attention was premature, since chefs were caught by surprise. Adding to this comes the problem that chefs and administrators feared the soldiers' resistance to and possible boycotting of the project. The Armed Forces' kitchens' clients are primarily young males taking the role of soldiers, and young males are, to start with, the demographic group who eats most meat [58]. In addition, serving in the military is often physically demanding, and this makes soldiers particularly concerned about having enough filling meals and proteins for building muscles [52]. Eating meat may

also serve as a symbolic means to maintain masculine identity [47]. When it was made voluntary for each camps' kitchen chef to implement the project, it is not surprising that only approximately one-third chose to do so. Possibly the outcome would have been different if the organisation was catering for a different demographic group in a different life situation. Furthermore, the name "Meatless Monday" may not be appealing to military staff and soldiers, since the name only reminds them of what is not on the plate. The term "meat-free" has previously been found to discourage consumers from choosing vegetarian dishes [59].

With a different approach to the implementation of Meatless Monday in the Norwegian Armed Forces, taking into account the socio-cultural context of the military, possibly there could also have been a stronger effect on the soldiers' attitudes. The results of our regression analysis indicate that soldiers belonging to camps which have had Meatless Monday measures are more likely to claim that being in the military has made them more positive to vegetarian food, but we do not find evidence that it has made them more likely to want to eat vegetarian dinners in the future. The correlation between exposure to Meatless Monday measures and more positive attitudes to vegetarian food is only significant at the 90% confidence level. The result is nevertheless interesting, as Meatless Monday schemes in some cases had been implemented without giving any information about it to soldiers, and even in some cases making the soldiers believe the plant-based food they were eating was meat. These are factors which reduces the likelihood of finding positive effects of the Meatless Monday scheme on the soldiers' attitudes. Furthermore, there were also indications that lack of knowledge about vegetarian food made it difficult for some cooks to make it attractive and tasty, and the qualitative study with soldiers found that of those who were exposed to vegetarian food, many were highly negative [47]. Given this, one could even expect a backlash result: that the military's Meatless Monday schemes had left the soldiers more negative to vegetarian food than before. The results from this analysis show that the contrary is more likely to be the case, and that the influence is far more likely to be positive.

Another interesting result from the study concerns attitudes and knowledge about environment and health relations with vegetarian food and meat. There is a lack of belief in meat reduction as a sustainability initiative, and the majority of the soldiers do not believe that high levels of meat consumption can be harmful to their health, or that a well-balanced vegetarian diet contains all the necessary nutrients the body needs. Possibly, these responses not only reflect a lack of knowledge, but also a strategy to reduce dissonance, since lowering meat consumption might be difficult [31]. The survey also shows that very few soldiers view themselves choosing to eat vegetarian food in the future. However, the regression analysis shows a strong correlation between health and environmental knowledge and attitudes and willingness to eat more plant based in the future. What can be learned from this is that knowledge and attitudes can be important factors when it comes to willingness to eat more vegetarian food.

6. Conclusions

An intervention such as Meatless Monday in the Armed Forces, which makes soldiers experience vegetarian food, could potentially foster a positive change of attitudes. However, our study shows that lack of knowledge and understanding of the benefits of meat reduction reduces their expressed willingness to change towards more plant-based diets. Lack of conviction about benefits of meat reduction also partly explains the difficulties encountered in the implementation of Meatless Monday in the Norwegian Armed Forces. With a stronger conviction among military staff about the usefulness of meat reduction, more efforts might have been put into the implementation, for instance by running an information campaign educating soldiers as well as military staff about the health and environmental benefits of vegetarian food. This, combined with training of cooks on how to prepare nutritious and tasty vegetarian meals, might have made the implementation more successful. Giving chefs and cooks more ownership to the project by taking them on board earlier in the process and developing plans for implementation in collaboration with them, could possibly also have been beneficial to the project.

However, despite the difficulties encountered in the implementation process, and despite the negative attitudes to vegetarian food among the soldiers, our study indicates that exposure to vegetarian food, hence learning more about what vegetarian food is by actually eating it, can potentially develop more positive attitudes towards meat-free meals. Our study shows that there is likely a positive impact on food sustainability from implementing a Meatless Monday campaign in institutions such as the Armed Forces.

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