



‘We're meat, so we need to eat meat to be who we are’: Understanding motivations that increase or reduce meat consumption among emerging adults in the University of Ghana food environment

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ABSTRACT

The increasing presence of meat products in the diets of sub-Saharan African (SSA) populations have consequences for human and planetary health in the subregion. But there are questions about whether emerging adults in SSA setting who are both important targets and potentially key drivers of dietary change are willing to modify their diets for health and ecological benefits. This study used focus group discussions and best friend dyad interviews with 46 university students. Verbatim transcripts were analysed thematically using NVivo-12. Various motivations to increase or reduce meat consumption are highlighted by the results, some of which participants deemed more relevant than others. Health concerns; animal welfare; and environmental sustainability were not important to this age group, and they did not consider changing their behaviour based on these drivers. Body weight/shape, meat as identity, pleasure, and joy; and meat-eating as part of socialisation were frequent drivers of increased meat consumption; religion/cultural practices were frequent drivers of limited consumption.

1.1. Introduction

The production and consumption of meat and dairy have been associated with both adverse health and high environmental impacts, including prevalence of non-communicable diseases (NCDs) and climate change (Willett et al., 2019). Animal-based foods (ABFs) in the diet have therefore been the fulcrum of discourses in scientific and policy communities around sustainable diets and climate change action. It is projected that the largest proportional and absolute increases in per capita environmental impacts and mortality from meat and other ABFs consumption will happen in African and other low- and middle-income countries (LMICs) (Springmann, Godfray, Rayner, & Scarborough, 2016; WMO, 2020). Understanding the drivers of meat consumption behaviour in Africa is therefore an important first step towards ensuring more sustainable diets.

Meat consumption is both a complicated and delicate issue and thus has been described as a mixed blessing (Horowitz, 2006). Although it is an important source of high-quality protein and micronutrients (Lupoli

et al., 2021), there is convincing evidence linking red and processed meat consumption with increased risk of NCDs (WCRF/AICR, 2018; Zhong et al., 2020), all-cause mortality (Zhong et al., 2020) and healthcare-related economic burden (WMO, 2020). By 2050, diet-related deaths are projected to increase most rapidly in LMICs as meat consumption increases (Springmann et al., 2016). The production of meat also has large environmental impacts, including high greenhouse gas (GHG) emissions, agricultural land and freshwater use (Springmann et al., 2018).

In many high-income countries (HICs), even though conscious vegetarianism is at an all-time high, meat consumption is still high and the dominant lifestyle (González, Marquès, Nadal, & Domingo, 2020). Emerging evidence however describes the emergence of a slow decline in meat consumption in some HICs (Ritchie & Roser, 2017). It has been suggested that the observed flattening of meat consumption in HICs may be driven by the increasing relevance of health, ethical and ecological concerns (Mullee et al., 2017). Beyond these and nutrition, people eat meat for other reasons including cultural/personal identity, pleasure

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and as a marker of wealth or social status (Lokuruka, 2006; Schösler, de Boer, Boersema, & Aiking, 2015).

In LMICs, meat consumption has been on the rise, at least over the last 20–30 years (Mensah, Nunes, Bockarie, Lillywhite, & Oyebo, 2020; Sans & Combris, 2015). This observation raises questions about whether consumption in LMICs will reach the levels of current HICs or hit a turning point before current HIC levels. Indeed between 1995 and 2015, annual growth in meat consumption per capita for LMICs (3%) surpassed that of HICs (0.4%) (USDA, 2015). If consumption in LMICs continues to increase, it is projected that current emerging economies will drive future demand for meat resulting from expected income increases and rapid population growth. This could dwarf the impact of declining meat consumption in current HICs. Sub-Saharan Africa will be a large source of this consumption drive given its projected large population growth rate and the expansion of its middle class. However, there is limited evidence and understanding of the underlying reasons why individuals in SSA would eat or form intentions to increase or reduce their meat consumption. This study sought to explore awareness of environmental sustainability and its link with meat consumption; identify motivations to reduce/increase meat consumption; and gauge willingness to eat less meat for ecological or animal welfare reasons among emerging adults in a university setting.

1.2. Methods

The study used data from best friend pair interviews (BFPI) and focus group discussions (FGD). The study is reported following the Consolidated Criteria for Reporting Qualitative Research (COREQ).

1.2.1. Recruitment

Participants were recruited from all colleges of the University of Ghana campus through poster advertisements on residential, departmental and faculty notice boards as well as on social media platforms and through in-person invitations. Participation was voluntary and students were aged 18 to 24 years which is a typical age range for university students in Ghana. Students at all levels of study were eligible to participate.

Focus groups consisted of a minimum of three and a maximum of eight participants. For BFPIs, a participant and one friend were eligible to participate. A best friend was defined as “a person within participants' own age group who they knew very well; with whom they met regularly (at least, a couple of times per week), engaged in activities with, ‘hang out’, and/or had fun or ‘chilled out’ with, and with whom they shared emotional or difficult moments” (Sedibe, Feeley, Voorend, Griffiths, & Doak, 2014). This could be someone from the same neighbourhood or the University, and not necessarily from the same faculty, department or hall of residence but must be a member of the university community. Eligible participants who expressed interest were given study information packs, including consent forms and a brief demographic questionnaire.

1.2.2. Data collection

A semi-structured approach was adopted with a topic guide used to inform the interviews and discussions. The topic guide was developed iteratively and piloted in a BFPI and an FGD with students from the study campus, data from which were later included in the final analysis as no significant modifications were subsequently made to the topic guide. FGDs and BFPIs were conducted within the University campus and at participants' convenience to minimise discomfort or distress. The study aimed for a minimum sample size of 48 using the principles of data saturation (Saunders et al., 2018) and maximum variation sampling (Palinkas et al., 2015). Data collection proceeded between November 2019 and March 2020. Each participant was given a ballpoint pen and airtime voucher worth ten Ghana cedis in compensation for their time.

1.2.3. Analysis

Verbatim transcripts were analysed thematically after Braun and Clarke (2006) by DOM using NVivo version 12 (QSR International Pty Ltd, 2018) and indexed into data tables to create descriptive themes. Descriptive themes were compared to identify patterns in order to generate analytical themes. Based on the pragmatic double coding process as described by Barbour (2003), emergent themes were refined iteratively based on discussions with OO and FOM. Themes were presented to participants for authenticity checking.

1.3. Results

1.3.1. Characteristics of participants

In total, 46 emerging adults participated in eight BFPIs and seven FGDs, lasting 60–75 min respectively. All participants were Ghanaian, aged between 18 and 24 years old. The gender balance was 53% male and 47% female. Fieldwork was curtailed due to COVID-19 restrictions on campus, but saturation was achieved at 46 participants. The full demographic details are presented in Table 1. All interviews and FGDs were conducted in person on the University of Ghana campus in an enclosed meeting room or at participants' residence (in one BFPI).

1.3.2. Emergent themes

Participants were categorised as self-declared medium, high meat-eaters or aspiring meat-reducers based on their responses to questions around the frequency of meat consumption. The majority of emerging adults identified themselves as high meat-eaters (HMEs) with only a few medium meat-eaters (MMEs) or aspiring meat-reducers.

Emerging adults drew on an array of explanations in narrating the basis for their intention to reduce or increase the amount of meat they

Table 1
Characteristics of participants.

Variable		No.	%
Gender	Female	21	46.7
	Male	25	53.3
Ethnicity	Akan	17	37.0
	Ewe	14	30.4
	Ga-Dangme	3	6.5
	Grusi	2	4.3
	Guan	1	2.2
	Mole-Dagbani	2	4.3
	Others	4	8.7
	Prefer not to say	3	6.5
Level of study	Year 1	3	6.5
	Year 2	11	23.9
	Year 3	21	45.7
	Year 4	10	21.7
	Postgraduate (PG)	1	2.2
Religion	Christian	39	84.8
	Moslem	5	10.9
	Not religious	1	2.2
	Prefer not to say	1	2.2
College	College of Basic and Applied Sciences	7	15.2
	College of Humanities	29	63.0
	College of Education	5	10.9
	College of Health Sciences	5	10.9
BMI (based on measured height and weight)	< 18.5	9	19.6
	18.5–24.9	29	63.0
	25.0–29.9	6	13.0
	30.0–34.9	2	4.3
	Obese	2	4.3
Accommodation type	Family/Guardian	1	2.2
	Private hostel	12	26.1
	University-managed hostel	33	71.7

eat. Eight dominant themes, mostly individual level motivations, were identified through the analysis, recounted principally in connection with (1) health/nutrition, (2) body weight and (3) body image concerns, and (4) animal welfare, (5) meat identity, (6) environmental sustainability, (7) religion, and (8) social concerns. These are reported below with example quotes from participants.

1.3.2.1. 'Everything can be bad for your health': Contesting meat-related health concerns

Motivations to consume more meat were recounted in relation to health/nutrition concerns. Many emerging adults downplayed health risks associated with excessive meat consumption. They deployed various strategies that rendered meat-related health risks as exaggerated, a ploy that sought to rationalise and uphold high meat consumption and to psychologically 'immunise themselves' from concerns about illness and/or mortality associated with excess meat consumption. Several participants for example used various descriptions (including "stuff"; "it's a lie"; "I don't really care") that 'reduced' meat-related health risks to 'health scares' which many of them—particularly female participants—demonstrated in their narratives would not 'succeed' in making them eat less meat. Young people also cited other practices involving risk such as cigarette smoking and drinking SSBs, and even life itself as being inundated with risk:

"Yes. I believe your death will come when its time for you to die. And then everything has disadvantages and advantages. If its not meat, its carbonated drink, too many constraints and stuff. If you'll die, you'll die by all means. When its time to die you'll die anyway" (R6, FGD 1. Male).

Although there was some recognition of risk, excessive meat consumption was thus construed as nothing unique/peculiar—just one of the possible contributory factors to ill-health—and not worthy of disproportionate attention. Health risks were also deferred to an 'imagined' distant future of later adult life.

At other times, there was a demonstration of defiance towards excessive meat consumption and the possible health risks and implications, which again reinforces the dismissal of risk. Some HME expressed such defiance to include cases where they are advised on medical grounds to reduce meat consumption, which other participants challenged.

"Interviewer: Interesting. Respondent 3, what do you think about reducing your meat intake?"

Respondent 3: No, please. I'm sorry.

Respondent 2: Its gonna affect your health.

Respondent 3: 'enee en-affekte e.' [then it should affect me] "cause me, in my family most people get diabetes. Yet I take sugar like crazy. I don't really care. The fact that they got it doesn't mean I'll get it..." (R3, FGD 3. Female).

Other participants brushed off the possibility of being advised by a medical or nutrition professional on the premise that they were not consuming "too much meat" in the first place. However, in another breadth most of such respondents were unsure about how much meat they ate on average, using words or phrases like "this is difficult", "it's not something I monitor", "how do you calculate that?" and "maybe".

Some "meat lovers" however observed that medical advice due to the onset of a medical condition associated with high meat consumption would be the only motivation to make downward adjustments to their intake. Young people who shared this view felt that they would 'struggle' but for their "own good" they would "have no option" although it would not be done "whole-heartedly".

Many of the few participants who had already reduced their meat intake and identified as medium meat eaters had done so on personal health grounds. Explanations for their decision were based on medical advice from health or nutrition professionals and on personal knowledge of the adverse health effects of consuming excess fat from meat, including the digestion duration for meat.

"...I heard meat takes some days to digest in the body. So intake of too much meat is unhealthy...so I think we should concentrate on eating more vegetable instead of meat which also has fats. Or other protein like beans, other plant protein" (R2, BFPI 3. Male).

Meat-related epidemic outbreaks like the Bird Flu and Ebola were also cited as examples of the only circumstances that would lead to the curtailment of meat consumption. Even in such circumstances, participants who shared this view observed that they would abstain from only the affected meat types.

"Like something serious like Ebola that has infected the animals that's not making it possible to eat meat, then we know that meat type is a no-go area..." (R1, BFPI 3. Female).

In the above excerpts, infectious diseases are constructed as more salient health conditions compared to NCDs. It appeared the salience of infectious diseases appeared to contribute to influencing behaviour change towards meat consumption.

1.3.2.2. 'Our body is meat and needs meat': Meat as a tool for growth and weight control

Emerging adults' body image goals were also recounted as a motivation for high meat consumption. Participants observed that their bodies were still developing as young people and therefore required more meat protein to facilitate this growth. In some cases, this was premised on the perception that "our body is like meat" and therefore "needed to eat more meat to be what we are." Meat consumption was very often presented as a 'tool' for weight gain. Emerging adults who wanted to put on weight therefore 'set out to intentionally' consume more meat and other animal protein to actualise their desired body image.

"...So, I think I even have to gain a little bit more weight personally. So, for me I may want to increase my meat intake." (R1, FGD 4).

Many participants appeared to prioritise their individual body image ideals above their personal health, animal welfare and environmental sustainability (discussed below). A consensus among emerging adults, especially females, on meat as a tool for weight control is reinforced when body image ideals was again presented as motivation to curtail meat consumption: "...the only thing that will motivate me is summer body. That's the only thing that'll motivate me to stop eating meat." (R1, BFPI 2). While the aim here was to lose weight, the underlying motivation was the same as those expressed by participants who ate meat to gain weight. That is, to "look nice." For a few meat lovers, their body image goals were the only reasons they would consider reducing or modifying their intake of meat.

1.3.2.3. Willingness to eliminate or reduce meat consumption because of animal welfare

There was widespread disregard for animal welfare in decisions related to meat consumption. Animals were constructed as 'food' and a nutrient source for humans. The language used by participants expressed utter absence of sympathy for animals. Participants employed words and phrases like "I don't care", "I don't give a hoot", and they are "delicious". Compromising the nutrients and sensory pleasure derived from meat for the welfare of the animal was thus something that "doesn't cross their mind": "we need nutrients and they are in the animals... Ha! Ha! Ha! So rather I look at what I'm going to gain from the food. I don't look at the animal's welfare..." (R1, BFPI 6).

In isolated cases some participants demonstrated some level of concern in the context of sustainable development, religious beliefs and emotions related to animals used as pets. Observations in relation to both sustainable development and religious beliefs did not condemn the "killing" or eating of animals per se, but the scale and manner in which it was done. The 'SDG persons' advocated minimal killings and replenishing food used as feed and fodder. In the religious argument, the

Islamic tenet instructing the humane slaughtering of animals was evoked to highlight the concept of Khalifah, which emphasises man's duty to look after Allah's creation: "...I'm looking at it in terms of Islam. You don't just kill animals anyhow and consume them. You have to ensure their welfare. When you're about to kill a fowl you make it drink water...And you kill it in the name of Allah. 'Se woreku no a' [when slaughtering it], you cut it at once and for all to ease the pain...not like you're using a carpenter's saw. You, you're human, imagine being killed like this..." (R2, FGD2).

Attachment to domesticated animals was another dimension of empathy for animals expressed:

"...I don't go for certain animals that I know that they are too close to human beings like dog, cat, rabbit...its some way to me..." (R3, FGD 2).

However, based on the foregoing three-part list of concerns (sustainable development, animal welfare, religious faith), only two participants occasionally stayed away from eating meat.

Two female friends in BFPI 4 openly expressed dislike for animals: "And if people don't take the meat, there'll be too many animals running around. I don't like that. They should be eating the meat so the animals will reduce. There are too many animals." (R2, BFPI 4. Female). For such young people, curtailing meat consumption on the grounds of animal welfare was out of the question.

1.3.2.4. 'I'm young and a meat person': Meat as a seal of youthful identity, a source of pleasure and joy

For HMEs, motivations to consume more meat were explained in the context of being "meat lovers" and the widespread belief of being too young to be meat-reducers or meat-excluders. Students construed emerging adulthood as the 'best period' to 'enjoy' meat and portrayed it as a 'window of opportunity' not to be missed.

"...Well, I've seen so much stuff about that. I do not really care. I'm a meat person and young. This is the time to enjoy..." (R3, FGD3, Female).

High meat consumption was constructed as key part of a 'seal of identity' for being young. The emphasis was placed on the 'pleasure' and not denying oneself of the gratification derived from eating meat while they can—'enjoying the moment' sort of. More female than male participants identified with this notion as well as identifying as "meat lovers". For most emerging adults who identified as "meat lovers" further exploration uncovered a range of sensory properties, including taste, aroma (usually referred to as 'scent' by participants), and texture of various meat options as underlying drivers for decisions to consume more meat: "...So I think the scent is something inside that makes me want goat so very much. If I smell the aroma somewhere, I'll follow it till I get to the source." (R3, FGD 2, Female).

Many students recounted how these sensory properties contributed to 'high meat-eating' habit formation and defined which meat type participants preferred over another. Most participants identified as chicken lovers, followed by beef and then pork lovers. In addition to these meat types, other animal protein and meat products like eggs and sausages were frequently mentioned favourites because they were viewed as relatively affordable and the "always available" options apart from their sensory properties.

For other students who identified as meat reducers, sensory properties of meat were a 'put-off' for them. Visual appearance properties of meat such as marbling, and the in-mouth texture were constructed as essential parameters for consumer perception of the tenderness of meat.

"Ok, so my first point is I'll look at the digestion. That's, is the meat able to digest early or not? Like 'wele', I don't like it. Because I feel like it doesn't digest early. But if you come to KFC, their meat is somehow soft so, I consider those kinds of meats.[sic]" (R1, FGD 1. Male).

1.3.2.5. Knowledge and awareness of the environmental impacts of meat production and consumption

One of the recurring themes was the lack of understanding of the

concept of environmental sustainability and most participants were hearing it for the first time during the FGD/BFPI session. Prior to the interviewer's explanation, environmental sustainability was usually misconstrued to mean environmental sanitation or sanitary conditions in the area surrounding a food outlet. In an isolated case, it was misinterpreted to mean an epidemic outbreak (see supplementary file).

The link between meat consumption (and diets in general) and climate change or environmental sustainability was thus a difficult concept for many participants to grasp. There was mixed response when this was later explained. Although some emerging adults agreed to the possibility of their meat intake adversely affecting the environment, in most cases it was a controversial topic that sparked discussions. Young people who agreed were inclined to associate meat consumption with methane emissions and fodder-related deforestation. Other participants who agreed cited the inextricable interrelationship between human activities and the environment. Those who disagreed expressed doubts about how their meat "eating would affect the environment."

Although participants underestimated the possibility of their meat intake affecting the environment, they expressed genuine interest in understanding the connection between the environment and meat production and consumption.

1.3.2.6. Willingness to eliminate or reduce meat consumption because of environmental reasons

When asked if participants would reduce their meat consumption for the sake of environmental sustainability, the majority expressed unwillingness to eliminate or reduce their consumption. Participants who advanced this narrative evoked several arguments as justification, including the notion that their individual meat intake alone cannot destroy the environment or "make any difference": "Respondent 2: And I have to agree with Ama that Kofi's meat intake alone wouldn't make a difference. I mean you do need a lot of people to make a difference. One person can't..."

Respondent 1: It starts from one person.

Respondent 2: Well, it starts, but how many people are interested...and I mean is not only the meat. It has to be more things, talk about the trees. And once we all shift our attention to fish, fish too is going to reduce". (BFPI 4).

Such participants prioritized personal goals like weight gain over ecological concerns. However, a minority of participants, during FGDs and in one BFPI, expressed disagreement and recounted that 'every little' reduction counts. Young people who advanced this view expressed willingness to reduce their meat consumption for ecological reasons or were already doing so, at least, occasionally. This included students who identified as "SDG person" or student of Sustainable Development. Explanations for the willingness were premised on extreme weather conditions and the belief that damaging the ecosystem equates 'a self-infliction of pain'. For such participants, the continuous consumption of certain meat types would be an endorsement of environmentally hostile activities in the meat supply chain, including the burning of car tyres as fuel for roasting animal carcasses.

In other arguments, meat consumption was presented as just one small part of a myriad of 'bigger' activities like tree-felling and illegal mining, affecting climate change.

Participants' narratives, including 'SDG persons' and 'meat persons' demonstrated a universal admission of genuine difficulty with eliminating meat completely from their diets for the sake of the environment: "I can replace [cow] milk with soya [milk]...Animals don't produce soya milk. That's the only thing I could but I can't [do that with meat] tsk tsk tsk. 'Wotua me ka koraa mennye' [Even if you pay me, I won't do it...]" (R3, FGD 3). Participants therefore doubted the acceptability of meat reduction/exclusion to the general population.

Gradually replacing (or swapping) meat with plant-protein portions appeared to be appealing to some participants, including some "meat lovers" in isolated cases. Other meat lovers suggested a meat-for-meat

substitution instead, for ecological reasons. But this was dependent on whether meat in their diet contributed to climate change or was from animals in extinction or those being endangered.

1.3.2.7. 'Forbidden fruits': Meat and religion

Religious belief was a strong motivation for some emerging adults to reduce their overall meat intake or stay away from certain meat types. Participants expressed religious beliefs that forbid them from eating various meat types (see supplementary file). This was presented as an indirect means by which meat consumption is limited. Apart from one participant who identified as Christian, most participants who associated with this view were Muslims, with views based on the Islamic principles of "Halal" and "Haram" as prescribed by the Qur'an and Hadeeth. Participants cited meat from animals such as the pig and dogs among others as "forbidden" or "Haram" although some participants demonstrated uncertainty about the full list of animals considered "Haram". This belief was reported to be grounded in the context that such meats are unclean based on historical antecedents in the Qur'an, at the commandment of the Prophet Muhammed (peace be upon him), being from animals not slaughtered in an Islamic manner (called "Zabihah") or in the name of any other person or creation other than "in the name of Allah". The only Christian participant whose religious faith motivated them to stay away from certain meat types identified with the latter. They were not to eat any meat slaughtered in the name of a deity.

Meat from animals outside of the 'prohibition list' and slaughtered in accordance with 'Zabihah' was considered "Halal" or lawful meat to eat. Indeed, other Muslim participants observed that these 'Halal-Haram' principles in the wisdom of Allah and the forebears of the Islamic faith "are for our own health benefit." To support this, a mundane trope relating to pork being worm-infested was cited to highlight the healthiness of the "Haram" prescriptions. Tied to this trope was the perception or misconception that pigs contain toxins as "they do not sweat".

In a similar vein, other young people expressed certain religious identities that did not bar them from the consumption of certain meat types as some religious faiths did. Participant narratives indicated that these religious identities—Protestant, Charismatic, and Pentecostal Christians—influenced the type and amount of meat they ate.

1.3.2.8. The 'meat socialisation'

The socio-cultural aspects of meat consumption were also recounted as motivations for high meat consumption. Emerging adults recounted that they were socialised into a culture of meat-eating where meat is central to many dishes/delicacies. Here again, meat socialisation from infancy is deployed to emphasise the need for a shift to a meat protein and plant protein balance in their diets to be a gradual process. Emerging adults used this to convey the implicit contradiction in how they are socialised from childhood to develop taste buds for meat but are later "told" it is only "good up to a point."

Meat was presented as the most preferred and enjoyable part of the meal, a perspective which participants reported they learned from the home and at social gatherings. But in the home, the biggest portion of meat was allocated to the breadwinner. Here again, the association of meat consumption with seniority is presented as another normative belief integral to meat socialisation. One participant for example recounts how the grandmother and the father use popular practices as strategies to voluntarily cut their meat consumption as the exigencies of age such as tooth loss set in.

"And me I feel at a point in time I may reduce my meat intake. Because as at that time you don't need the protein. Our grandmothers have been in due time. Even it will get to the time you'll not even feel like eating meat again. Sometimes my daddy [asks me], if you want meat, come and take the meat from my food [plate]. He'll take fish...so now I know it will get to a point in time I will be told to stop eating meat..." (R2, FGD 3).

Other narratives highlight the cultural specificity of meat socialisation: "Yes! Snakes and ants are not animals that we really crave to eat

because that's not what we're socialised into. But in other societies, even here in Ghana, people take snake meat, which is so nice to them." (R3, FGD 2). Nested in R3's (FGD2) narrative is the cultural differences in meat socialisation, emphasising that different cultures and/or families are socialised into liking or disliking certain meat types.

Meat consumption practices at home were also cited as motivations for eating less meat. Some participants [(R2, BFPI 2), (R1, BFPI 4)] reported family dietary restrictions at the home which created a supportive environment for dietary compliance relating to the exclusion of red meat and pork from diets prepared from home. "In my house, my mother doesn't eat pork so growing up there wasn't pork in the house. I started eating pork when I came to university. My friends used to say pork is so nice... so I tried it and I realised that I like it..." (R2, BFPI 2). The only instances when participants from such homes ate any red meats or pork happened at venues outside of the home, particularly at social gatherings.

Social gatherings were constructed as 'havens' for freely available meat which usually was presented as the central ingredient to popular dishes. At such gatherings, young people recounted that they are 'irresistibly invited' to "eat a lot of meat."

Participant narratives also suggested that the values, beliefs and preferences of their eating companions and friends influenced their meat-eating and procurement attitudes. They were presented as motivations for both increased and less meat consumption.

"...my best friend is a Muslim but I like pork...she has this perception that most of the sausages are pork sausage, and she wouldn't eat it at all. So when I'm going to buy food for both of us to eat, I wouldn't buy sausage, I wouldn't buy pork..." (R2, FGD 3).

Indeed, participants' narratives suggest that meat socialisation from the home appeared to 'give in' to peer pressure to adopt contrary meat attitudes with age and in the university foodscape or out-of-home.

1.4. Discussion

This study set out to provide insights into emerging adults' mindset and motivation to eating meat to support the initiation of strategies to promote healthy and sustainable diets. The results highlight a number of varying motivations among emerging adults to increase or reduce meat consumption some of which they considered more relevant than others. Health concerns; animal welfare; and environmental sustainability were not important to this age group, and they did not consider changing their behaviour on the basis of these drivers. Body weight and shape; meat as identity, pleasure, and joy; meat eating as part of socialisation were frequent drivers of higher meat consumption; religious and cultural practices were frequent drivers of reduced meat consumption.

The study finds body image and weight concerns/dissatisfaction to be both drivers of increased preference for more meat (more dominant) and conversely, a motive for intentions to reduce meat consumption. Previous cross-sectional studies have found that body image perceptions influence nutrient intake and inspire dieting among female university students in Kenya and Poland, respectively (Waswa, 2011). Young males' preference for heavier-looking bodies in this study may be in pursuit of weight gain in the form of muscle. The division over preference for heavier and slender body shapes in this study's female sample (as meat consumption drivers) is likely a materialised reflection of the coming together of 'Western' female body image ideals and the long-standing Ghanaian (and African) cultural preference for 'larger' female bodies or buxomness. Considering that young people may be consuming more or less meat based on perceived weight status resulting perhaps from 'conflicting' societal pressures to look 'good', this may impede consumption behaviour change.

The scepticism and defiance demonstrated by young people towards known health risks related to high meat consumption is consistent with findings from Sweden (Bohm, 2016) and defiance towards health promotion for other lifestyle issues like smoking (Triandafilidis, Ussher, Perz, & Huppertz, 2017). For young people in this university campus,

meat consumption behaviour change was warranted only within the context of a diagnosed condition in later life. [Vizcaino et al. \(2021\)](#) found similar attitudes among students in a US university 94% of whom were less likely to follow less-meat diets to prevent ill-health. Life-course studies have consistently shown that early life behavioural factors (including eating/food behaviour) are important risk factors for the onset of NCDs, obesity and for general wellbeing in later life ([Clark & Lee, 2021](#)).

Actions towards interventions for this study population should consider health promotion that emphasises the importance of pre-adulthood dietary behaviour towards morbidity and mortality in middle-age. This ties in with the need for education on the recommended levels of meat consumption, of which this study population expressed extremely limited knowledge. Similar findings of limited nutrition knowledge has been reported in other populations ([Hagmann, Siegrist, & Hartmann, 2019](#); [Kullen, Iredale, Prvan, & O'Connor, 2016](#)). University students with knowledge of dietary guidelines or improved nutrition knowledge followed healthier diets compared to students lacking nutrition knowledge ([Jerome, Baker, & Fang, 2018](#)), although [Perlstein, McCoombe, Macfarlane, Bell, and Nowson \(2017\)](#) reported contrary findings in Australian medical students. Considering that students' scepticism (in the present study) was borne out of limited information, increasing awareness about the linkages between dietary behaviours in early life and health status in later life may contribute partly to meat consumption behaviour modifications in this population.

The study also revealed widespread lack of awareness of the concept of environmental sustainability and the fact that meat production emits GHG emissions and therefore contributes to climate change. When the concepts were explained, the majority of participants were sceptical (about the association between their meat consumption and climate change) and not persuaded to modify their meat-eating habits for ecological reasons. Previous studies including systematic reviews ([Sanchez-Sabate & Sabaté, 2019](#)) have reported similar findings of limited awareness and scepticism towards the connection between meat consumption and environmental sustainability in Scottish adults ([Macdiarmid, Douglas, & Campbell, 2016](#)), in UK ([Clonan, Wilson, Swift, Leibovici, & Holdsworth, 2015](#)), and in the Chatham House multi-country (CHMC) survey ([Bailey, Froggatt, & Wellesley, 2014](#)). In other surveys among US college and Belgian university students, <10% and 5% of them, respectively, linked meat with climate change ([Truelove & Parks, 2012](#)) or had "very much" knowledge about it ([De Groeve & Bleys, 2017](#)).

For participants in the current study, climate change was not an important driver of behaviour, likely due to limited awareness. However, upon explanation, environmental sustainability seemed to have potential as an issue that interested these emerging adults and could motivate them to reduce meat consumption. Similarly, in the CHMC study, participants from emerging economies demonstrated greater willingness to modify consumption behaviour as were those more aware about meat's environmental impacts ([Bailey et al., 2014](#)). Although bridging the awareness gap could increase willingness to act, that alone may not be effective at changing meat-eating behaviours. However, it appears to be an essential prerequisite for behaviour change. In this study, the few emerging adults who knew about the meat-climate change nexus prior to attending this study occasionally did forgo meat for climate objectives, but still faced the dilemma of doing or not doing so consistently, similar to the meat paradox effect ([Oleschuk, Johnston, & Baumann, 2019](#)).

In this emerging adult sample, animal welfare was also a new concept. Even when explained, unlike the concept of environmental sustainability, this student sample was not persuaded to modify their meat consumption based on animal welfare. Animals were largely viewed as a nice/tasty food source and necessary for nutrients. Similar findings have been reported in environmentally-informed students from the Department of Environmental studies in two large Czech Republic universities ([Šedová, Slovák, & Ježková, 2016](#)). Using animals for food

was not considered an ethical issue among meat-eating students of environmental studies ([Šedová et al., 2016](#)). These findings are consistent with recent theorisations of the reasons for rationalising meat consumption—the 4Ns of justification ([Piazza et al., 2015](#)). That is, the belief that meat consumption is natural, normal, necessary, and nice.

Although the issue of 'ethically incorrect' animal products was largely not an important driver of meat-eating behaviour in this study, the strongest animal welfare concerns regarding meat consumption were expressed within the religious belief context. In Africa and Asia, Adventists are more likely to be vegetarians based on the belief that dietary choices partly contribute to salvation ([McBride et al., 2021](#)). While some do not practice veganism or vegetarianism, many are meat reducers or choose a pescatarian lifestyle as an alternative. Previous evidence suggests that meat-related behaviours based on ethical convictions (as in Islamic religion) may be enduring ([Hoffman, Stallings, Bessinger, & Brooks, 2013](#)).

The observed general unwillingness to modify meat consumption in this sample is not surprising considering how meat is viewed and the role assigned to meat in the diet across cultures. In Ghana, there is a longstanding perception of meat and dairy consumption as a marker of social class/wealth and 'living well' ([Agyei-Mensah & Aikins, 2010](#)). Eating meat regularly is seen to confer a superior social status. There is also a dimension of 'masculinity' which manifests in how meat is shared in the home/household. The lion's share is served to 'the man of the house' who is usually the breadwinner. Although, female students in this study demonstrated relatively higher dedication to meat consumption than males.

Meat and dairy are sometimes used as rewards for children in the Ghanaian home. In Ghana, like many other African cultures, meat and dairy are thus deep-seated desirable status symbols ([Bundala, Kinabo, Jumbe, Rybak, & Sieber, 2020](#)) imbibed through infancy into adulthood. For this reason, behaviour change in this emerging adult group may therefore take time and may require multi-level approaches to gradually change cultural perceptions about meat and dairy consumption. Behaviour change around meat consumption in SSA may also be challenged with multiple nutrition dilemmas including the increasing dual-malnutrition burden. While meat consumption behaviour change in this group may offer large absolute environmental benefits, it has been suggested that dietary behaviour change in Africa should be carefully planned and implemented in a manner that reduces undernutrition and micronutrient deficiencies without worsening obesity and NCD prevalence ([Mensah et al., 2020](#)).

Students in this study viewed emerging adulthood as the best period to enjoy meat. However, substituting portions of their meat with plant protein appeared to appeal to this student sample. The flexitarian dietary regime which is a growing trend in Europe has been recommended as an easier way to make dietary modifications that offer dual health and environmental benefits without completely cutting out meat. The flexitarian diet may therefore appeal to this study's sample as it allows them to continue to 'enjoy' some meat and at the same time contribute to climate change action.

1.5. Conclusion

The observed limited awareness, scepticism and downplaying of the adverse health and environmental implications of high meat consumption are important behaviour change barriers. Whilst education and awareness creation are likely important pre-requisites, it would be ignorant to suggest that these can solely lead to meat-eating behaviour change in these emerging adults. Personal and socio-cultural values and beliefs including body image ideals; meat as identity, pleasure, and joy; meat eating as part of socialisation; religion and cultural practices are more important drivers of meat-eating behaviour in this group. Individual level behaviour change may be unattainable if these personal, cultural, and religious values and beliefs are not considered. It is suggested that alongside objective ecological and health goals, these values,

and beliefs must be incorporated into discussions and debates around meat consumption in order for culturally acceptable and sustainable diets to emerge. Given the complexity of factors driving meat-eating behaviour and the deep-seated role meat plays in the diets of the cultures represented in this study, a multi-level and multidisciplinary approach may be successful at changing dietary behaviour. However, this may take time.

Authorship statement

All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated sufficiently in the work to take public responsibility for the content, including participation in the concept, design, analysis, writing, or revision of the manuscript. Furthermore, each author certifies that this material or similar material has not been and will not be submitted to or published in any other publication before its appearance in the Meat Science Journal (Special issue: Global Meat Perspectives).

Authorship contributions

Category 1

Conception and design of study: D.O. Mensah, R. Lillywhite, O. Oyeboade; acquisition of data: D.O. Mensah, F.O. Mintah, S.A. Oteng; analysis and/or interpretation of data: D.O. Mensah, F.O. Mintah, O. Oyeboade.

Category 2

Drafting the manuscript: D.O. Mensah; revising the manuscript critically for important intellectual content: D.O. Mensah, R. Lillywhite, F.O. Mintah, S.A. Oteng, O. Oyeboade.

Category 3

Approval of the version of the manuscript to be published (the names of all authors must be listed): D.O. Mensah, F.O. Mintah, S.A. Oteng, R. Lillywhite, O. Oyeboade.

Author contributions

DOM, RL and OO conceptualised the study protocol. DOM carried out data collection having had previous experience and training in qualitative interviewing. FOM and SAO, trained research assistants took turns in assisting with data collection. DOM, FOM and OO carried out analysis. DOM drafted the manuscript which he, OO and RL reviewed and edited.

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Ethical approval & consent to participate

The study was approved by the Biomedical and Scientific Research Ethics Committee of the University of Warwick (BSREC) (REF.: BSREC 115/18-19) and the Ethical and Protocol Review Committee (EPRC) of the University of Ghana (REF.: CHS-Et/M2—4.12/2019-2020). Informed written consent was obtained from all participants prior to both BFPI and FGD sessions. All procedures were carried out in accordance with relevant guidelines and regulations.

Declaration of Competing Interest

None

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Appendix A. Supplementary data

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