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University student practices and perceptions on eating behaviours whilst living away from home

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ABSTRACT

Transition to university is a vulnerable time and associated with adverse health behaviors. Purchasing and consuming healthy food is generally not a high priority due to other challenges they face. This study explored the dietary practices and perceptions which influenced eating behaviors of university students when living away from home. Forty-two university students ($n = 27$ male) participated in 8 focus groups which identified four themes as being barriers to eating a healthier diet, namely Physical Environment, University lifestyle, self-confidence, and personal factors. Food choice is a complex behavior and these findings when applied to Maslow's hierarchy of needs suggests that basic physiological needs for food is prioritized and only when this is satisfied is making healthier food choices considered.

1. Introduction

The transition for many young adults leaving the parental home and moving away to university is an important time in influencing short- and longer-term eating habits and wider lifestyle behaviors (Papadiki et al., 2007). The transition involves significant changes as for many it will be the first time that they live away from home. Previous studies suggests that many factors influence their dietary intake and food choice which include autonomy over food choices, affordability of food, exposure to new social groups, cooking skills and facilities, nutritional knowledge and exam stress (Sprake et al 2018; Nelson et al., 2008). In addition, students from other countries and regions moving to Universities in UK are likely to face further differences including for example availability of traditional foods, lifestyle, climate and culture. Studies suggest that university students display dietary behaviors which are unlikely to be conducive to either short or long-term health as students have a tendency towards eating an imbalanced and poorer quality diet (Sprake et al., 2018) irrespective of the country of study (Pearcey & Zhan, 2018) or culture/religion (Navarro-Prado et al., 2017) or year of study. As a result of this critical transition period many young people are reported to gain weight becoming obese which puts them at risk for chronic diseases for example type 2 diabetes (Guo et al., 2000).

Evidence from both USA and UK surveys have concluded that the typical university student's diet is generally low in foods likely to contribute to optimal dietary patterns and perceived as healthier choices such as in vegetables, fruits, and dairy products and also higher in fat, sugar, salt and high in alcohol and perceived as less healthy (Deliens et al., 2019; Hilger et al., 2017 Zellner et al. 2006; Kelly et al. 2013; Kasperek et al. 2008; Egger & Swinburn, 1997) which is unlikely to be conducive with good health (Sprake et al., 2018). A diet high in energy, snacks and coupled with excessive alcohol intake is reported to contribute to increased energy intake

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which is associated with a high risk of developing obesity and a risk factor for a variety of non-communicable diseases such as type 2 diabetes, cardiovascular disease and certain cancers. Studies have shown that first year students have reportedly gained between 3 and 4.4 kg during their first year (Kelly et al., 2013; Napolitano et al., 2013) and students are reported to gain weight more rapidly than a young person not attending university (Holm-Denoma et al., 2008). Such weight gain if sustained over the 3-4 years at University may lead to obesity in later life and is associated with increased risk of developing chronic disease and long-term health implications lasting well into adulthood (Kelly et al., 2013). Overall promotion of a healthier diet is important for health but also has the potential to influence cognitive function and academic performance (Burkhalter & Hillman, 2011). A systematic review involving studies with university students reported that the majority of studies demonstrated a positive association between diet and academic achievement ($n = 5$) and educational success, in that students who consumed regular meals, including breakfast, and also those who consumed more fruit, were found to have higher academic achievement (Burrows et al., 2017). Similarly, Babaeer et al. (2022) found moderate positive associations between vegetable intake and educational outcomes as assessed by grade point average (GPA) and negative associations between frequency of consuming alcohol and educational outcomes. Good academic performance at University may have lasting effects on students future health, quality of life, career and earning capacity (Burrows et al., 2017), therefore promoting a healthier diet throughout university may have positive effects both for health and academic performance.

However substantial evidence indicates that this is a vulnerable period for students and associated with adverse health and diet behaviors which many relate to weight-gain. Purchasing and consuming healthy food is perhaps not a high priority due to other challenges they face. The way people prioritize some needs over others is explained by Maslow's 'hierarchy of 1 needs' (Maslow, 1943). Maslow describes five levels of hierarchy which places basic physiological needs (diet and nutrition, sleep, clothing, shelter) as the foundation (bottom of hierarchy) and only when these basic needs are met will the next level in this hierarchy become relevant. Second level involves safety (finance, employment, health), third layer social needs, fourth level self esteem and top, self- actualization. Van Lenthe et al., (2015) interprets this hierarchy with regards socioeconomic inequalities and food choice and suggests that individuals with higher levels of income (or education) satisfy more basic needs and therefore end up higher in the hierarchy. Evidence suggests that those on low incomes for example students are unlikely to satisfy lower-level needs as other needs are priority. Additionally van Lenthe et al. (2015) compares this to an obesogenic environment where food is plentiful and suggests that making healthy food choices instead of solely satisfying the need to consume sufficient energy becomes larger at higher levels of the hierarchy and is prioritized only once other needs are satisfied. The basic need of sufficient energy intake is met, however when surrounded by an abundance of less healthy foods, making healthy choices can be seen as a need to reach self-fulfilment and as such it becomes a need which is not satisfied until all lower level needs are met and it is not a priority (Van Lenthe et al., 2015).

University life therefore is a vulnerable time which is associated with adverse health and food behaviors related with weight-gain, therefore it is important to understand the factors which influence eating behaviors of students when living away from home which may help understand the most effective health promotion strategies

The aim of this study was to explore the dietary practices and perceptions of university students in Northern Ireland, UK which influenced eating behaviors when living away from home.

Table 1
Focus group topic guide.

Question type	Question
Introduction	1. Briefly introduce yourself: (course, where are you from?) 2. How would you describe a 'healthy diet' and 'unhealthy diet' 3. Do you think of yourself as healthy?
-Transition	3. When you think about 'health in university students what comes to mind '? Do you think a lot about your food choices or your body weight? Or is it being physically active? Or getting enough sleep? Does eating healthy help you study/learn?
For all students: check which year when asking	4. a/b- Think of the last year(s) being a university student (except year 1). Has your eating habits changed? Has your body weight changed since being a registered student? What are the reasons for a change in diet/ body weight? Ask year 1 what changes they have made since starting University 4.c How would you describe your cooking skills? Do you cook meals? What do you cook? What are the reasons for not cooking? 5. Is it expensive to buy food from shops for one person? Do you find it difficult to get time to shop? Is it difficult to get a bus to the shops? Do you budget your money for food? Does that influence your eating behavior?
Key questions	6.Has your alcohol intake changed? Do you drink more whilst away from home? 7.What might have caused/influenced these changes to your diet/ health behaviors? 8. What do you think are the barriers to eating healthy? And which of the previous mentioned factors have had the greatest influence?
How to promote healthy eating for students in future?	9. Do you use social network sites (e.g., Facebook)? For what or why do you use these? What examples of social network sites do you regularly use? 10. Following this focus group we aim to develop an intervention to help students make healthier food choices. What ways do you think would promote healthy eating behaviors in students/what tools do you think would be useful for students? (e.g., nutritional tips/recipes or cooking skills) 11. Would social media or social network websites would be useful? If so, what would encourage you to participate in an intervention? 12. Is there anything you wish to suggest or add to our discussions regarding how best to improve the diet of students whilst at university and ways to develop education interventions?

2. Methods

2.1. Sampling, recruitment and participants

Participants were recruited from a convenience sample of registered students. A global University e mail was sent to all full-time students in Ulster University in Spring 2017 and invited to participate in this qualitative study. The e mail contained brief details of the focus group study with a link to a participant information sheet and also a short screening questionnaire (via SurveyMonkey®) to assess eligibility to participate. Inclusion criteria required participants to be >18 years old, regularly living away from home (>4 nights each week) and full time students studying in University. Students were also asked to provide contact e-mail for the researcher to arrange participation in a focus group convenient for them. Additionally, the researcher undertook face-to-face recruitment by attending each campus to advertise the study by distributing leaflets to encourage students to volunteer. Both methods used aimed to ensure diversity of opinions by recruiting from a wide range of academic disciplines and also local and international students. The aim was to recruit 8-10 participants for one focus group to be held on each of the four campuses.

2.2. Procedure

Semi structured focus groups were conducted in Spring 2017 by one of the research team (first author) together with a co-facilitator (nutrition student). The researcher was trained in qualitative research methods and had previous experience in this area. A co-facilitator (nutrition student) attended all focus groups and recorded notes to assist with analysis to ensure inter-rater compatibility. An interview schedule and topic guide (Table 1) was designed based on published literature and then pilot-tested to explore a set of topics relevant to issues which may influence eating behaviors. This guidance was used to guide conversations around key issues that may impact on eating behaviors and dietary intake among the students. Focus groups were semi structured and used open-ended questions to create a friendly rapport and leave adequate opportunity to explore factors affecting cooking and eating habits. Questions included probing statements to elicit discussion on topics including barriers to eating healthy, importance of eating whilst learning and studying and used to guide discussions and ensure a consistent approach between each of the groups. Transition and key questions were used to lead the participants and to focus on the aim of the study. A question also addressed ways to promote healthy eating and ideas for an intervention and concluded by summarizing key points raised. Duration of each of the focus groups was approximately 60-90 minutes. All focus groups were recorded for later transcription. No further focus groups were planned when saturation was reached and when no further new themes or categories arose.

At the beginning of each focus group participants were provided with a brief description of the study and clarification on what would be discussed. Additionally, participants were asked to complete a short questionnaire which asked questions on age, gender, self-reported height and weight and details of academic study (including discipline, level and year of study) and on average how many nights they lived away from home.

2.3. Data handling and analysis

Digital recordings of the focus groups were transcribed verbatim in Microsoft Word by the researcher (AAH) additionally written notes recorded by the co-facilitator (Nutrition student) were used to clarify and/or verify. The qualitative data was stored and managed in NVivo (v.10 QSR International Pty Ltd; Doncaster, Victoria, Australia), and in line with the inductive approach, conventional content analysis was used to label, code and categorize the data to elucidate common themes and describe participant experiences. To create established and meaningful themes, a thematic analysis approach through the process of coding in six phases was used for the transcription process; these phases were (1) familiarization with data where initially transcripts were read and (2) initial codes were generating then (3) sorted into meaningful groups of preliminary themes where codes featuring similar contents were pulled together which yielding themes that described concepts then (4) themes were reviewed to ensure they were distinct from other themes, next (5) themes were defined and named into the main and sub themes and finally (6) written up as findings with accompanying verbatim quotes to represent common themes (Braun & Clarke, 2006).

To establish consistency of theme generation the researcher (AAH) and co-facilitator (nutrition student) independently reviewed the transcripts and generated codes. At least 3 participants across the focus groups had to state the theme for it to be considered. Following independent analysis (AJH; AMG) of two randomly selected quotes for each theme, themes were confirmed. Any discrepancies were reconciled through discussion and further review of transcripts. The agreement between coder (AAH) was 91% suggesting that themes developed were appropriate. Selected verbatim quotes that captured participants' experiences and practices have been included in results.

Statistical Package for Social Sciences (SPSS V23) was used to analyze data. Descriptive statistics (mean SD) were used to characterize the participants. Independent t-test was used to compare the mean of the two groups with for example gender. Chi-squared test was used for categorical data such as BMI categories. BMI was used to categorise body weight status into underweight (BMI <18.5kg/m²), normal (BMI 18.5-24.9kg/m²), overweight (BMI 25– 29.9kg/m²) and obese (BMI >30kg/m²) cut-off points of WHO international classification.

2.4. Ethics

Ethical approval was granted by Ulster University School of Biomedical Sciences Research Ethics committee (FCBMS-15-042). All

participants provided written informed consent prior to participation and were informed of the option to withdraw if wished. All data was anonymized and participants were allocated a unique identification number. Data was secured as per University policy using password protected systems.

3. Results

A total of 42 university students participated in 8 focus groups with at least one focus group on each of the 4 University campus sites.

3.1. Student characteristics

Eight focus group discussions were conducted until saturation of new information was reached. A total of 42 students (27 male: 25 female) and included both undergraduate ($n = 17$) and postgraduate ($n = 25$) students from both UK/EU (45%) and non-EU (55%) countries with mean age 23 years ($SD \pm 5.3$), with mean body mass index BMI 24.5 kg/m^2 ($SD \pm 4.6$) which was calculated as weight (kg) divided by height squared (m^2). Many participants considered themselves to be within a normal BMI range. Participants were from a variety of academic disciplines. Therefore, this variety in participant characteristics contributed to a wide range of insights into the eating behaviors and dietary practices when living away from home. Characteristics of participants are shown in Table 2.

3.2. Themes

Four main themes were identified from analysis of the focus group with regards influencing eating behaviors which was analysed and linked to Maslow's 'hierarchy of needs' (Maslow 1943). The importance of understanding the way people prioritize some needs over others is the consideration of interactions between behavior and the level of need.

Four main themes identified as being barriers to eating a 'healthy' diet, namely: i) Physical Environment (cooking facilities, food availability) ii) University lifestyle (academic studies; exams and assessment, student funds), iii) Self-confidence (nutrition knowledge), and iv) personal factors (priorities, peers, personal beliefs) These themes are described below, with anonymized participant quotes included to illustrate the significant theme/sub theme.

3.2.1. Theme 1: physical environment

Availability and accessibility to purchase healthy food and also having access to appropriate cooking facilities was perceived as a very important barrier by many of those who participated. Participants reported that when living in rented accommodation there was often a lack of cooking facilities and equipment (for example grill) which limited choice of meals to prepare. Additionally, cold storage refrigerator and freezer was often limited in size for everyone sharing kitchens, therefore storage and shelf life of fresh foods needed to be considered and were factors in food choice:

'At home I enjoyed eating a lot of different fruit and vegetables, but here I cannot keep them in the fridge because its so small and it is shared by others so might get eaten by another person. Instead, I have to buy tinned.' (F, UG)

Some students also commented that the location of their accommodation limited their choice of foods as small shops had less

Table 2
Demographics of participants.

Variables	(%, Mean, SD)
Gender (%)	
-Male	64
-Female	36
Level of study (%)	
-Undergraduate	40
-Postgraduate	60
Age (yrs)	23 ± 5.3
Body Mass Index (kg/m^2)	24.5 ± 4.6
Nationality (%)	
-British/Irish/UK	40
-European	5
-Non-European	55
Residency	
% living in University accommodation	45
% living in private shared accommodation	55
Study discipline (%)	
Biomedical sciences	25
Food & Nutrition	25
Social sciences	6
Arts	20
Computing and engineering	14
Business	10

variety of fresh foods. Distance to travel to large supermarkets for students who did not have access to a car was a barrier to eating healthy and public transportation to shops was infrequent requiring students to pay for taxis or home delivery which required a minimum purchase. Alternatively some students opted to order take away meals.

'I used just to ring local 'take away' or similar because I did not have enough time and I don't want to go and stand waiting on buses when I just came home from classes really tired.' (M, UG)

Some international students reported that access to usual foods eaten in their home countries were not available in shops close to University and instead they had to change their diet which was a barrier. *'I usually eat halal meats, however I need to travel 50 miles to purchase this, therefore I now don't eat meat and instead eat more carbs, therefore my diet is not as healthy.'* (M, PG)

3.2.2. Theme 2: university lifestyle

All students who participated commented on the cost of food being a major barrier to eating more healthy meals. Students reported having 'student loans' and had to learn how to budget their finances. They commented that early in the academic year when they had received their allowance, they ate more healthy types of foods compared to the end when they had limited money available. They noted that fresh fruits and vegetables were costly when buying in small quantities and often there was a lot of wastage, therefore they commented that frozen or tinned varieties were more economical.

I bought a prepared bag of seasonal vegetables last week and ended up putting about half in the bin because I got tired eating the same vegetables every day' In future I will buy tinned as the freezer is too small. (F, UG).

Limited finances was an obstacle for students.

'I think especially us we have to be careful with money and we do have to work out how much money we have to spend on food so you need to kind of think methodically about what you're having for dinner' (M, UG).

A few students commented that it was cheaper to buy a hot meal in the University canteen at lunch time instead of buying everything fresh and then having to cook it later, however not all options on the menu were appetizing or indeed healthier.

I buy lunch at least once a week whilst at Uni as there is a choice of hot options and its cheaper, although there is usually always chips which is not that healthy' (M,PG)

First year students reported that the transition from secondary school to University was a stressful time in their life when they felt unprepared for living away from home and adapting to new teaching methods. They reported that eating habits varied depending on their academic workload throughout semester. When deadlines of coursework and exams were approaching many students reported feeling under stress with less time to shop, cook and prepare meals. Most of the participants in this study reported eating more high energy, high fat meals and snacks around exam times. One participant reported

'I eat everything during exam periods as I always feel hungry'. 'I, actually gained weight because I felt the stress of the exams and I needed something to run away from it; sometimes you –just eat; even when you are not hungry' (F, UG).

3.2.3. Theme 3: self confidence

Participants reported that creditable nutritional knowledge (selection and preparation) was required and many commented that they had some knowledge and awareness of what foods they should eat. Many knew they needed to eat 5 portions fruit and vegetables each day and that a certain level of dietary knowledge was required to eat a healthy diet. One reported that

'Like, everyone's old enough to be able to go find out if something's good for you and more healthy; it's more the preparation of the food which is the difficult part'. (M, UG)

Another student reported *'Sometimes you don't have knowledge about what meals to cook to be more healthy, I suppose at school I dropped that subject as I disliked cooking' and my mum cooked all the meals at home.* (M,UG)

Another student commented *'I know a lot about nutrition as I'm studying Food & Nutrition, however knowledge doesn't always change my behavior'* (F,UG). Additionally, all students reported being aware of nutrition misinformation and confusion when shopping which impacted their understanding.

There is a lot of information about food and diets on social media much of which is nonsense. (M PG) Students also commented that in their first year at university, a lack of cooking and food awareness played a significant role in affecting their eating behaviors. One first year student stated *'when living at home my mum did all the planning of meals, shopping and cooking. I didn't know it was so complicated to work out what to eat for dinner and then to try and cook it'*. Another first year student reported *'I am getting better now and a bit more confident about making dinner but it was very stressful initially.'* *'I don't really cook all that much. I can make pasta and stuff like that but I wouldn't say I'm a very adventurous with cooking so really not great'* (F, UG).

Both UK/EU and non-EU students commented on the fact that they did learned basic cooking knowledge and skills in school, however they didn't continue to use these skills at home because parents did that, therefore they lost confidence in their ability.

3.2.4. Theme 4: personal factors

Priorities (social needs)

Students reported that cooking for one person was less of a priority as they would prefer spending time doing other activities. Shopping for food and cooking was reported to be time consuming and they reporting preferring quick and easy meals which didn't take too long to prepare for example pasta dishes. One student stated

'some people just want a quick meal as you're hungry and tired by the time you get finished and because you've been sitting in the lecture theatre for so long, you just want tasty food which might not be healthy, you really don't think about it' (M PG). Another student said that when they are busy with lots of coursework and exams they don't have time to travel to supermarkets and cook food *aid 'the faster my dinner is ready the more time I have to work on my assignments and catch up on lecture notes'* (M UG). Therefore, convenience is also

important to students who are cooking for themselves.

Food preferences

Students reported that taste of food was an important factor in influencing their food choices. If students like a specific food they are more likely to eat it. *I like chocolate and also chips but know they are 'unhealthy' but I'm still going to eat both, but will restrict my portions rather than avoid.* (F,UG). Another student reported *'I know oily fish is very good for you, but I really do not like it and cannot force myself to eat it even though I know I need to eat 2 portions eat week!*

Peers

Students revealed that friends can positively and also negatively influence their eating behaviors. This was reported by some students who reported that they wanted to fit into a new group of friends and felt pressurized into doing the same as their friends: *'Most of the time I try to eat healthy but obviously there's many times when my flatmates suggest getting a takeaway as they don't cook at home; it's pretty hard when there is food in the kitchen'*. Another student stated I am trying to get to know people as I am in first year and therefore to gain social acceptance I want to do the same as everyone else even though it might be less healthy. *'I prefer to make my own lunch to bring to Uni as I like a snack at lunch time, however, that means I need to eat in a different place to my friends, so it's easier to buy lunch and sit together.* Students reported that peers can also have positive influences, *'My friends and I take it in turn to cook and we all help each other and make suggestions about what to eat, therefore it can be very healthy'*. (F UG)

Personal and religious beliefs

Many participants considered that their eating behaviors were affected by their own personal and religious beliefs and customs. One student reported becoming vegetarian because he was unable to source appropriate cultural foods: *'I eat halal foods which is difficult to purchase locally to the University, therefore I have to purchase halal kebabs from a Takeaway which are very fatty and less healthy. I therefore usually follow a vegetarian diet which can be healthier'* (M PG). Other students commented that eating behaviors change regularly and they go through phases of consuming large amounts of less healthy foods especially at the beginning of term at weekends *'...Like after the weekend I sometimes feel ashamed because I ate too much and gained weight, so I tend to eat more healthy food in the next day'* (F, UG). Another student stated that his diet was less healthy before coming to University and he hadn't changed that since moving and a poor diet was a habit *'For me when I was in my country, I used to eat unhealthy food, fast food, I don't know, maybe it is like a habit, so I do the same here'*. (M, PG)

4. Discussion

The aim of this qualitative study was to provide an insight into the eating practices and perceptions of university students living away from home and to identify barriers and possible strategies which could improve eating habits. Four main themes were identified as being barriers to eating a 'less healthy diet namely: i) Physical Environment (cooking facilities, food availability) ii) University lifestyle (academic studies; exams, timetables, student funds), iii) Self-confidence (nutrition knowledge), and iv) personal factors (time, peers, personal cultural and religious beliefs). These themes were analyzed and linked to Maslow's 'hierarchy of learner needs' (Maslow, 1943) to understand the motivations for human behavior and the way people prioritize some needs over others with each level representing a different human need.

Maslow describes five levels of hierarchy which places basic physiological needs as the foundation (lowest level). Maslow's theory suggests that peoples' needs at one level have to be met (or mostly met) before they can move to the next level and that unmet needs prevent the pursuit of needs higher in the pyramid. This framework suggests that basic physiological needs for example consuming adequate food for energy is prioritized and only when this is satisfied is making healthy food choices considered. Therefore, healthy food choices may only be important at higher levels.

In order to maintain good health and reduce the risk of health-related problems, everyone is encouraged to eat a healthy diet and maintain a healthy body weight. However due to the current obesogenic environment food choices are plentiful (Lenthe et al., 2015) therefore physiological needs are met at this basic level. It is suggested that in such environments when the basic need for energy is obtained, making healthy food choices is seen as a need to reach self-fulfilment and therefore not a priority until all lower-level needs are met (Lenthe et al., 2015).

Evidence suggests that many young people can start University being a healthy body weight and becoming overweight or obese within a few years by the end of their programme (Grooper et al., 2011), which puts them at high risk of developing chronic diseases. It is well-recognized that food choice is a complex behavior and is associated with many factors including for example autonomy over food choices, affordability, cooking facilities and skills, nutritional knowledge and academic stress which is broadly in keeping with similar qualitative studies in university students in Belgium, (Deliens et al., 2014, Wongprawmas et al., 2022).

In this present study, students articulated that they were constantly facing competing demands, such as academic deadlines and also invitations to participate in social and extracurricular activities which is similar to previous findings which reported that when compared with other responsibilities selection of healthy food was a low priority (Nelson et al., 2009). Students in this current study noted that they are likely to choose foods which are fast to prepare, inexpensive, and convenient instead of healthier options which is consistent with Marquis et al., (2005), who noted that students gave priority to convenience and cost over health.

Maslow's second level 'safety needs' can be interpreted in the context of this current study as student finance as students reported that one of the most influential factors in determining their food choices was the cost of food and their personal financial situation. Students studying in a UK University usually take 'student maintenance loan' or similar financial support which provides a financial loan to cover living costs, however all students reported that this amount was inadequate to cover food and rent, bills etc and all relied on families and or paid employment to supplement the cost. Therefore, all students are living on minimal budgets throughout the year, however early in the academic year students acknowledged that when they had received their allowances, they ate more healthier

foods compared to the end when they had limited money available. They noted that fresh fruits and vegetables were costly when buying in small quantities and often there was a lot of wastage, therefore it was often difficult to eat more healthy and be more economical. Interestingly the current study noted that when the university's canteen had a cheaper price structure for healthy options there was an increased uptake of healthier food options suggesting that cost is an important issue for students when deciding what to eat.

Social need is the third layer in Maslow's hierarchy and relates to interpersonal relationships. This stage is not based on basic needs but relates to emotional needs such as peers and friends. In this current study peers were identified as being influential in making decisions and students reported both positive and also negative influences to their eating behaviors. Students new to University reported that they were keen to gain social acceptance and fit into a new group of friends and therefore felt pressurized into doing the same as their friends. Others reported getting takeaway meals because flatmates were choosing this food for dinner and they didn't want to be excluded, therefore decided to also have takeaway meals which are generally less healthy.

Maslow's fourth level is self-esteem and interpreted as a desire to be self-confident. Once the basic needs have been satisfied the esteem needs play a more prominent role in motivating behavior which in this study was the motivation to choose healthier foods. Participants reported lacking in confidence in their ability to cook and also some students lacked nutritional awareness and knowledge therefore they lost confidence in their ability to prepare healthier foods. They reported having limited awareness of food labels and which foods were healthier to purchase when in large supermarkets faced with a lot of choice. Also, some students commented that there was a lot of conflicting nutritional information available on social media which impacted on their ability to understand what foods they should purchase and likely to be healthier. Students were aware of basic knowledge as most knew they needed to eat 5 portions fruit and vegetables each day, however other issues for example reading food labels they found confusing. Maslow theory suggests that people who are able to achieve good self-esteem and recognition of others feel confident in their abilities, in this case to understand which foods to eat and have appropriate cooking skills to change their behavior

The final and top level of Maslow's hierarchy is self-actualization which is described as being the pinnacle and achieving the fullest potential, which when interpreted in context of this study suggests the ability to maximize opportunities and ultimately eat a healthier diet and more than fulfilling basic needs of providing adequate energy. This study showed that only a few students reported that they tried to achieve a healthier diet every day even if they had set backs (for example cost of food or exam stresses). Students were aware that eating a balanced and healthier diet was better for their health and some mentioned that they were driven to avoid gaining weight and therefore could overcome some of the barriers. Others commented that they wanted to succeed in their academic studies and were driven to achieve excellent grades and understood the importance of good nutrition. This comment is supported by some evidence which suggests that a healthy diet may positively influence academic achievement in University (Burrows et al., 2017) and in those students who consumed regular healthier foods, and also more fruit (Burrows et al., 2017). As a more favorable dietary intake may impact upon learning and academic achievement therefore Maslow's hierarchy of learner needs can be applied where physiological needs (adequate energy) are the foundation of the needs of a learner, however at the top of this pyramid it suggests that to eat a healthier diet students must have all lower levels fulfilled before they can achieve their full potential.

This current study also tried to identify strategies to motivate students to change their behavior with regards making healthier food choices. In this current study students reported being unfamiliar with basic cooking skills which is similar, to findings reported by Cluskey and Grobe (2009) that some university students do not have the skills to make healthier food selections and also to prepare appropriate meals, therefore deterring them from adapting a healthier lifestyle in university. Students highlighted the need for the provision of practical nutritional information for example reading food labels which would help students understand which foods to purchase. Participants in this study proposed that short nutrition education online information/webinars should be available in universities. However, to date nutritional information provided varies between universities, which unlike in primary and secondary schools where there are statutory guidelines surrounding health and nutrition for schools, for example in Northern Ireland these are defined by CCEA (CCEA, 2022). However, at present these are limited to Key Stage 3 (early post-primary school aged 12-14 years). There may be a need to ensure that the statutory guidance is extended to include advice for what older pupils (aged 16-18) need to know before they make the transition to independent living. There may be some evidence that cooking skills developed in schools are situated and not able to transfer to the new context of University. This 'situated learning' has been widely reported in other educational areas (Lave & Wenger, 1991). Universities may therefore need to consider induction programmes and a wider focus that those related to specific subject domains. Likewise, Tanton et al., (2015) reported that a review of university food environments may be helpful to support more positive eating behaviors in an emerging adult population. Sprake et al., (2018) recommended that targeted interventions for students who consumed poorer diets and practiced unfavorable lifestyle behaviors were required. Furthermore, more focus on Government health promotion campaigns to limit red meat and alcohol consumption may be useful. Additionally, efforts to promote student engagement in cooking and food preparation, and more practical nutritional information is encouraged and improving affordability of healthier food may improve students diet whilst on campus for example subsidizing food or providing for example meal deals. Students noted that when the healthier foods on campus was promoted at a cheaper prices they were more likely to purchase it.

4.1. Practical implications

There are several practical implications from this study. Not all barriers identified by students are modifiable for example physical environment and university lifestyle, however other aspects such as self confidence and personal factors could be targeted as approaches to promote a healthier diet amongst students in University setting. Maslow's theory suggests that there is a hierarchy in the way people prioritize some needs over others to understanding the motivations for human behavior, in study the reasons and barriers

for students eating a less healthy diet. Therefore, health promotion interventions should target more easily modifiable factors in particular social needs, esteem needs as considered by Maslow's hierarchy which are required to motivate students to change behavior. Strategies such as education and training to develop nutritional knowledge and awareness of practical aspects of food choice such as reading food labels and developing cooking skills would be seen as a way of reaching self-actualization. Maslow's theory can be interpreted as achieving basic needs of eating foods to provide energy, however in the obesogenic environment where there is an abundance of less healthy food choices readily available, the priority of choosing foods which are perceived as more healthy is seen as a need to reach self-fulfilment and will not be prioritized until basic needs are met (Van Lethe et al., 2015)

4.2. Limitations

This study adds to the limited evidence base which investigated the dietary practices and factors influencing eating healthy foods whilst living away from home and studying in University in UK.

Focus group participants were recruited from a convenience sample of registered students in one University in UK, hence results cannot be generalized to other Universities. Nevertheless it adds to the limited evidence base. Another limitation is that both undergraduate and postgraduate students and also local and international students were included. This provided greater diversity in opinion however may have limited some of the themes identified. Likewise body mass index (BMI) was not considered in the recruitment and may not have showed sufficient variety in the samples

5. Conclusion

This study identified four main themes as being barriers to eating a 'healthy' diet. Physical environment, University lifestyle, self-confidence and personal factors. These themes were linked to Maslow's 'hierarchy of needs' (Maslow, 1943) which revealed that only when the basic need of sufficient energy intake is met in an environment surrounded by less healthy food choices, healthy food choices are unlikely to be priority until at higher levels of the hierarchy.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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