Dissertation Academic Paper
Student Dietitians Perceptions and Beliefs of the Link Between Vegetarianism and Eating Disorders.

Student Declaration In Respect of Individual Work
I declare that the whole of this work is the result of my individual effort and that all quotations from other authors have been acknowledged.

Dissertation submitted in partial fulfilment of the requirements of Cardiff Metropolitan University for the Degree of Bachelor of Science with Honours.

Signed: Paige Christopher
Date: 10/05/2018
Student Dietitians Perceptions and beliefs of the link between vegetarianism and Eating Disorders.

Abstract.

Background – Several studies have suggested there is a link between restrictive eating and eating disorders, in particular vegetarianism and orthorexia.

Methods – A cross sectional study consisting of 29 student dietitians from Cardiff Metropolitan University completed an online questionnaire to gain quantitative and qualitative data. Their beliefs and opinions regarding the link between vegetarianism and eating disorders were analysed and compared against existing research.

Results – 62% of participants agreed that vegetarianism has no more of a link with disordered eating than a diet containing meat. 58.2% of participants believed that a vegetarian diet had no similarities to an eating disorder and thought becoming a vegetarian was more due to animal welfare and ethics, although 45% non-vegetarians agreed, which was statistically significant. More participants disagreed that being a vegetarian teenage girl was putting them more at risk of developing an eating disorder, although those that did agree with the statement were predominantly young student dietitians (<25 years old). 48% participants agreed that vegetarians consider their health more than non-vegetarians, but with 72.4% disagreeing that they consider their appearance more than non-vegetarians. 55% participants agreed that both vegetarians could use their diet as a way of avoiding food in situations and it would be easier to hide an eating disorder due the restrictions needed on a vegetarian diet.

Conclusions - The present study indicates that the beliefs and perceptions of the link between eating disorders and vegetarianism amongst student dietitians varies
and further research is needed to allow knowledge around the topic to be more comprehensive.

**Keywords:** Vegetarianism, Orthorexia, Eating Disorders, Student Dietitians, Restrictive Eating.

**Eating Disorders.**

There are numerous types of eating disorders which fall under different clinical categories, put in place under classification systems to help diagnose and treat. The most predominantly used system due to its expanding diagnostic criteria (Tyrer, 2014) is the DSM-V, which is the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, published by the American Psychiatric Association (2013). It now consists of 8 diagnostic categories, these include, Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, Pica, Rumination Disorder, Avoidant/restrictive Food Intake Disorder (ARFID), Other Specified Feeding or Eating Disorder (OSFED) and Unspecified Feeding or Eating Disorder (UFED) (American Psychiatric Association, 2013).

Eating Disorders are conditions that affect individuals physically, psychologically and socially, affecting over 725,000 people in the UK and causing more deaths than any other mental illness (BEAT, 2014). Birmingham et al (2005) found that Anorexia Nervosa has the highest mortality rate compared to any other psychological disorder in female adolescents. Although this study had a large sample size, it used DSM-IV as the diagnostic classification and did not utilise the most current improved DSM-V system, which has further
diagnostic criteria, therefore limiting its validity within current research.

Anyone can develop an eating disorder but certain population groups and individuals appear to be more at risk, such as teenage girls (Toro et al, 2005). Micali et al (2013) state that 4610 girls aged 15-19 years old develop an eating disorder in the UK each year, compared to 336 boys aged 15-19.

Another study shows that eating disorder related hospital admission rates of adolescents in the UK had increased from 2-3 per 100,000 people in 1990 to 5-6 per 100,000 in 2011 (Holland et al, 2016). This contradicts Litmanen (2016) who suggested eating disorder prevalence amongst adolescents is not increasing, however this study was carried out on a relatively small sample in Finland and therefore does not represent the UK population.

With ARFID now being recognised within the DSM-V, there is an increasing need to explore restrictive eating patterns further (Fitzgerald and Frankum, 2017).

Eating disorders often involve unhealthy eating patterns which can include restrictive eating and meal skipping (Campbell and Peebles, 2014), with food restriction often being the early signs of an eating disorder developing, particularly anorexia nervosa (Claes, Simons and Vandereucken, 2009).

Norris et al (2013) suggests a proportion of patients being treated for ARFID eventually become diagnosed with Anorexia Nervosa.

This highlights the importance that restrictive eating is recognised before it can become much more of a health risk.
Eating habits that are said to increase the risk of developing an eating disorder include Orthorexia Nervosa and vegetarianism (Schmidt, 2017; Trautmann et al, 2008).

Orthorexia Nervosa is known as an unhealthy obsession with food, where food and health is constantly being thought about and any consumption of unhealthy foods would result in ‘punishment’ which would typically be a stricter diet. For individuals suffering from Orthorexia Nervosa, the diet can become so restricted, that nutritional intake reduces and health declines (Schmidt, 2017).

Orthorexia and Anorexia Nervosa have similar characteristics including how they make a person’s life and behaviour revolve around food and how obsessive concern with food overrides anything else in their life, including socialising (Zamora et al, 2005).

Although other research suggests there are comparable differences between the two, as Orthorexia is the desire to lose excess body weight, whereas anorexia is developed when an individual is struggling with negative body image (Oberele et al, 2017).

It is common for Orthorexia sufferers to follow a vegan or vegetarian diet because of their fear of consuming any ‘contaminated’ foods (Zamora et al, 2005). Vegetarians are not generally labelled as Orthorexics because they do not typically restrict animal products in fear of their heath (Bratman and Knight, 2000), although there is likely to be a subgroup of these at-risk individuals.
Vegetarianism

The Vegetarian Society (2016) defines a vegetarian as someone that consumes a meat-free diet, with the most common type being Lacto-ovo-vegetarian, meaning dairy and eggs are also consumed.
The demographic for the vegetarian population varies but there has been an increase in the number of teenage girls becoming vegetarians, with ten percent of them following a vegetarian diet, compared with only one percent of teenage boys (British Dietetic Association, 2013).

Following a vegetarian diet has been associated with improved self-esteem and happiness, but if it becomes too restricted and develops into Orthorexia Nervosa it can have a negative impact of physical and mental health (Oberle et al, 2017).

Restrictive Eating Patterns

Vegetarianism could be classed as a form of a restrictive eating by individual choice, however it is not typically viewed that way because if a vegetarian diet is followed correctly it is well able to provide adequate nutrition for an individual (Evtuck et al, 2016).

Despite this, other studies suggest that vegetarianism may have an association with eating disorders or could potentially be the start of developing an eating disorder because of the social-acceptability of the restrictive eating habits within a vegetarian diet (Bardone-Cone et al, 2012).

Adolescent girls have been classified as a vulnerable group for the development of eating disorders. Studies such as Bas et al (2005) found that female vegetarians had on average a lower BMI and more abnormal eating attitudes than the non-
vegetarians. The study concludes that vegetarianism puts adolescence at a higher risk of developing an eating disorder but similarly to other studies of this topic, although it includes a large sample size, it was carried out in Turkey and therefore the results are not an accurate representation the UK population.

Research shows that a growing number of women in their late teens, are adopting vegetarian diets in order to lose weight and mask restrictive eating patterns (Finnigan, 2004).

This resonates with Gatward (2016) who suggests food restriction in Orthorexia and vegetarianism is similar to the food restrictions practiced in Anorexia Nervosa and often stems from low self-esteem and social exclusion. Brechan and Kvalem (2016) confirm this theory expressing that body image and self-esteem have a direct effect on restrained eating.

Several Studies have attempted to show the connection between vegetarianism and disordered eating such as Bardone-Cone et al (2012) who found a significantly higher number of women who have had an eating disorder had also at some point been a vegetarian in their lifetime, compared to those women who had no history of eating disorders.

Further research shows that a vegetarian diet in western cultures increases the risk of mental disorders, which includes eating disorders (Michalak et al, 2012). Strengths of this study include the large sample size and it reduced bias by using professional interviewers.

Although there are no current statistics that show any correlation between the rise in individuals becoming vegetarians and the rise in diagnosed eating disorders, it seems to be becoming more obvious that there could be a link between the two.
**Dietitians’ and the recognition of Eating Disorders.**

Dietitians’ are trained to assess and provide nutritional advice to individuals in a patient centred approach (BAPEN, 2016). Many dietitians’ work with individuals with disordered eating and advise them regarding various habits and food beliefs. Therefore, it is important that they are aware of the potential precursors or signs of eating disorders, as to identify them early (Rohde et al, 2015).

A study by Ozier and Henry (2010) looked at dietitians’ confidence in relation to nutrition in eating disorders and found they were low in confidence in treating eating disorder patients, indicating an increased need for education in disordered eating. They explain how increasing dietitians’ skills of identification of maladaptive behaviours with food will increase their confidence thus improve the effectiveness of treatment.

Schwendler (2014) suggests that eating disorders are prevalent in student dietitians due to the determination of trying to be healthy. With this in mind, this could influence student dietitian’s perceptions of restrictive eating and eating disorders, but whether this has a negative or positive effect on perception is currently unknown.

As more research is becoming available regarding the link between eating disorders and vegetarianism, it is interesting to explore the perceptions of a new generation of student dietitians to see if they believe there to be a connection between the two, as this could be beneficial in the identification and treatment of eating disorders in the future (Ozier and Henry, 2010)
Therefore, the present study aims to look at student dietitians’ perceptions and beliefs of the link between vegetarianism and disordered eating.

**Materials and Methods.**

**Study Design.**

A cross sectional study design was used amongst Cardiff Metropolitan University dietetic students.

A cross sectional study was most appropriate for this research as it is relatively quick and easy to conduct and all data is only collected once, which was beneficial in the limited time scale provided to carry put the study (Health Knowledge Organisation, 2017). The primary weakness of using the cross-sectional study method was the susceptibility to bias due to the prompted questions and statements on the questionnaire.

Both quantitative and qualitative data was collected from participants using a self-complete online questionnaire. The questionnaire was designed to assess beliefs and perceptions using Likert scaled response questions, with free text boxes to allow for additional comments. (See Appendix 2). This mixed method approach is an advantage as it allowed for deeper exploration into the participants beliefs and a further understanding into their quantitative choices (Green et al, 2014).

The main limitation of the mixed method approach was the extra time required of participants to complete the questionnaire.

Likert scale responses were chosen for the questionnaire to allow for a balanced scoring system to assess perceptions and beliefs of statements, rather than knowledge (Carifio et al, 2007).
The negative factors of using Likert scales, such as bias, were minimised in this study by the succeeding comment boxes, as this reduces the limitations of the participant’s answers, allowing for richer data collection (Cathain and Thomas, 2004).

Qualitative data encourages participants to pay more attention to the study question. It can also raise issues that have not previously been explored which can be vital information in the data collection (Cathain and Thomas, 2004).

**Sample.**

The participants involved in the study were all student dietitians aged 18+ from Cardiff Metropolitan University. All three years of student dietitians were invited to join the study.

As more research and understanding is becoming available regarding the link between eating disorders and vegetarianism, it was interesting to explore the perceptions of a new generation of student dietitians before they start full time work. Inclusion criteria consisted of student dietitians over the age of 18. Anyone who did not match this criteria were not invited to join the study.

**Ethics.**

An information coversheet (See Appendix 1) was emailed to participants before completing the online questionnaire. It explained how to consent to the study, how it would be anonymous and that they could leave the study at any moment.

Cardiff School of Health Science Ethics Committee approval was obtained before any questionnaires were sent and any data was collected (See Appendix 6).
**Materials.**

The questionnaire was designed to be completed online by participants in a short timeframe to allow for greater likelihood of completion and minimise the participants burden (Ainsworth et al, 2012).

The online Qualtrics questionnaire consisted of 10 questions, 7 being Likert scale responses with comments and 3 multiple choice questions to collect demographic data.

The questionnaire was piloted by 5 volunteers prior to any data being collected to ensure the questions/statements were understandable, all questions were relevant to the studies aim and it could be completed in a timely manner. No changes were needed to be made following the pilot study and data from the pilot questionnaires were not included in the data collection.

**Procedure.**

Individuals who met the inclusion criteria were invited to take part via email. The email included an information cover letter which explained how the data would be collected anonymously and how they could leave the study at any time. By reading the information coversheet and completing the questionnaire, this implies the participants consent. If the participants wished to take part in the study they selected the link to the online questionnaire which they then completed and their results were sent anonymously to the researcher.

**Data Analysis.**

Raw data was captured from the online questionnaire results using Excel. Results from this data were organised into tables and graphs to present findings.
Quantitative data from the Likert scale responses were analysed using Statistical Package for Social Sciences, version 24.0 (SPSS) (See Appendix 5) to look for any statistical significance. Thematic analysis was used to explore the qualitative data, allowing the researcher to identify themes from this.

Results.

Response rate and Demographics of participants.

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Participants (n)</th>
<th>Percentage (%)</th>
<th>Male</th>
<th>Number of Participants (n)</th>
<th>Percentage (%)</th>
<th>Female</th>
<th>Number of Participants (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-25</td>
<td>16</td>
<td>55.2%</td>
<td>3</td>
<td>37.5%</td>
<td>14</td>
<td>66.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26-33</td>
<td>7</td>
<td>24.1%</td>
<td>2</td>
<td>25.0%</td>
<td>5</td>
<td>23.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34-41</td>
<td>5</td>
<td>17.2%</td>
<td>3</td>
<td>37.5%</td>
<td>1</td>
<td>4.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42-49</td>
<td>1</td>
<td>3.4%</td>
<td>0</td>
<td>0%</td>
<td>1</td>
<td>4.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29</td>
<td></td>
<td>8</td>
<td></td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dietary Preferences

<table>
<thead>
<tr>
<th>Dietary Preferences</th>
<th>Number of Participants (n)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarian</td>
<td>2</td>
<td>6.9%</td>
</tr>
<tr>
<td>Non-Vegetarian</td>
<td>20</td>
<td>69.0%</td>
</tr>
<tr>
<td>Pescatarian (Just Fish)</td>
<td>4</td>
<td>13.8%</td>
</tr>
<tr>
<td>Vegan</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>10.3%</td>
</tr>
</tbody>
</table>

29 participants took part in the study, consisting of 8 males (27.6%) and 21 females (72.4%).

The demographic is 68.9% non-vegetarians, 13.8% pescatarians, 10.3% classify themselves as ‘other’ (including, semi-vegetarian, trying to limit meat intake and
gluten free) and 6.9% vegetarians.

No participants classified themselves as vegan.

The majority of participants (55.2%) were aged between 18-25.

**Table showing all results.**

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean Likert score</th>
<th>Median Likert score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vegetarianism has no more of a link with disordered eating than a diet containing meat.</td>
<td>3.48</td>
<td>3</td>
</tr>
<tr>
<td>I believe a vegetarian diet and disordered eating share some similarities.</td>
<td>6.34</td>
<td>7</td>
</tr>
<tr>
<td>A high proportion of teenage girls becoming vegetarians is putting this population group at a higher risk of developing an eating disorder.</td>
<td>6.21</td>
<td>5</td>
</tr>
<tr>
<td>Vegetarians lead a healthier lifestyle and consider their health more than non-vegetarians.</td>
<td>5.10</td>
<td>5</td>
</tr>
<tr>
<td>Vegetarians consider their appearance more than non-vegetarians.</td>
<td>7.48</td>
<td>8</td>
</tr>
<tr>
<td>Vegetarians could use their diet as a way of avoiding food in certain situations.</td>
<td>3.52</td>
<td>4</td>
</tr>
<tr>
<td>Due to the restrictions needed on a vegetarian diet, it would be easier to hide an eating disorder than when on a normal diet.</td>
<td>3.28</td>
<td>3</td>
</tr>
</tbody>
</table>

The above table shows the mean and median Likert scale results for all statements.

The Likert scale ranges from 0 – 10, with 0 being strongly agree, 2-4 agree, 5 unsure, 6-9 disagree and 10 strongly disagree.
The above chart shows that 45% of participants agreed that there was no more of a link between vegetarianism and disordered eating than a diet containing meat, with 17% strongly agreeing. 24% disagreed with the statement.

The participants who disagreed with the statement and believed that vegetarianism does have a link with disordered eating did so for a personal reason and said;

“This is true to myself, it gave me a convenient excuse to restrict foods” (ID 1).

And

“When I think of people I know personally who show signs of disordered eating, all are vegetarian or vegan” (ID 11).
45% of participants disagreed that vegetarianism shares similarities with disordered eating, with 14% strongly disagreeing. Contrastingly, 34% agreed with the statement.

Comparison of opinions by dietary preference.

<table>
<thead>
<tr>
<th>Likert Scale Ranking</th>
<th>Vegetarians</th>
<th>Non-vegetarians</th>
<th>Pescatarians (just fish)</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4 (0%)</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6 (20.7%)</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2 (6.9%)</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2 (6.9%)</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5 (17.2%)</td>
</tr>
<tr>
<td>8</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>6 (20.7%)</td>
</tr>
<tr>
<td>9</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4 (13.8%)</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>4 (13.8%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2 (6.9%)</strong></td>
<td><strong>20 (68.9%)</strong></td>
<td><strong>4 (13.8%)</strong></td>
<td><strong>3 (10.3%)</strong></td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>
This table shows 58.2% of all participants selected above 5 on the Likert scale and therefore disagree and strongly disagree that a vegetarian diet and disordered eating share similarities.

Participants that disagreed with the statement, made comments such as:

“In my experience being a vegetarian has more links to animal welfare and morals than about health or dieting” (ID 23).

45% of non-vegetarians agreed with the statement. This was statistically significant (Chi-squared, p = 0.043, t = 33.302, df = 21)

Comments supporting this include:

“I believe individuals with vegetarian habits have more disordered eating as they are consciously monitoring and analysing what they eat. It may sound stereotypical but eating meat tends to be more the ‘norm’ so choosing to not include meat may be classed as disordered eating” (ID 14).
The data shows that the younger population (<25 years old) agreed more with the statement than the older participants. However, this was not statistically significant (Chi-squared, $p = 0.784$, $t = 13.121$, df = 18).

37.5% of participants below the age of 25 selected <5 on the Likert scale indicating they agree with the statement compared to only 23% of participants above the age 25 agreeing with the statement.
The chart shows 45% participants agreed that vegetarians leads a healthier lifestyle than non-vegetarians, with 3% strongly agreeing. This contrasts with 31% participants who disagree with the statement.

**Comparison of opinions by dietary preference of participants.**

<table>
<thead>
<tr>
<th>Likert Scale Ranking</th>
<th>Vegetarians</th>
<th>Non-vegetarians</th>
<th>Pescatarians (just fish)</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>1 (3.4%)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>1 (3.4%)</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>8 (27.6%)</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td></td>
<td>1</td>
<td>1</td>
<td>4 (13.8%)</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td></td>
<td></td>
<td>4</td>
<td>4 (13.8%)</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1 (3.4%)</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
<td>1</td>
<td></td>
<td>1</td>
<td>4 (13.8%)</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3 (10.3%)</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>1 (3.4%)</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td>2 (6.9%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2 (6.9%)</td>
<td><strong>20 (69.0%)</strong></td>
<td><strong>4 (13.8%)</strong></td>
<td>3</td>
<td><strong>29</strong></td>
</tr>
</tbody>
</table>
This statement has produced a variety of results.
1 non-vegetarian participant selected 1, therefore strongly agreeing that vegetarians lead a healthier lifestyle than non-vegetarians, this is comparable to 2 other non-vegetarian participants who strongly disagreed with this statement.
Overall, 48.3% of all participants agreed with the statement, 37.9% disagreed and 13.8% were unsure.
The non-vegetarian participant who strongly agreed with the statement said:

“In general, I believe this to be true as vegetarians tend to be more interested in a wide range of healthy behaviours such as healthy eating, non-smoking, exercise and non-drinking” (ID 27).

The non-vegetarian participant who strongly disagreed with the statement said:

“Evidence shows us that a healthy balanced diet is best..[vegetarians] can sometimes be unknowingly putting themselves at risk” (ID 28).
This graph shows that 45% of participants do not believe that vegetarians consider their appearance more than non-vegetarians, with 27% of these strongly disagreeing. 14% of participants agreed with the statement. The participants that agreed explained it was dependant on individuals and had comments such as:

“to an extent. This depends on their reasoning for becoming a vegetarian. e.g. ethical, health, environmental or for a 'diet'” (ID 1).

and

“I don't imagine vegetarians to consider their appearance any more than non-vegetarians although as a lot of vegetarians are young females, this is probably true” (ID 17)
Graphs comparing participants' opinions on Q7 & Q8:

Q7 - Vegetarians could use their diet as a way of avoiding food in certain situations.

- Strongly Agree: 7% (n=2)
- Agree: 62% (n=18)
- Unsure: 14% (n=4)
- Disagree: 17% (n=5)
- Strongly Disagree: 0% (n=0)

Q8 - Due to the restrictions needed on a vegetarian diet, it would be easier to hide an eating disorder than when on a normal diet.

- Strongly Agree: 7% (n=2)
- Agree: 69% (n=20)
- Unsure: 17% (n=5)
- Disagree: 0% (n=0)
- Strongly Disagree: 0% (n=0)
The two graphs visually look similar and show the majority of participants agreed with both statements. 62% of participants believe vegetarians can use their diet as a way of avoiding food and 69% of participants agree that the restrictions needed on a vegetarian diet could make it easier for them to hide an eating disorder.

Participants that agreed with both statements made comments such as:

"Absolutely. Seen as a legitimate excuse to avoid certain foods rather than "I'm on a diet" or "I don't want any"" and "strongly agree [that vegetarians can use their diet to hide an eating disorder], particularly in strict vegetarian diets where animal cooking oils for example are omitted. Also vegetarian options tend to be lower in calories? or in a group situation could end up with half a meal or less - example a roast dinner a veggie could refuse meat, potatoes basted in lard, veg roasted with bacon or in the same tray as the meat, gravy with meat stock. BBQ's also would be an example of a situation like this" (ID 7).

17% of participants on both statements disagreed by selecting >5 on the Likert scale and stated:

"There are many vegetarian alternatives available now so this may not be easy to avoid food" (ID 14).

Between the two statements, 21% of participants were unsure.

A participant that was unsure about both statements said:
“Maybe, never thought about it in that way” and “that’s a really good point, not sure but I suppose it could be possible” (ID 28).

Discussion.

The aim of this study was to look at student dietitians’ perceptions and beliefs of the link between vegetarianism and disordered eating.

Despite taking all achievable measures, there were still limitations to this study. The sample size (n=29) was small and only represented student dietitians from a University in South Wales and not across the UK. It was also not clear which year of university they were in and therefore their experience and knowledge of the topic were unrecognised.

Another limitation regards the collected data from participants, as some individuals had selected >5 on the Likert scale, indicating that they disagree with the statement but contrastingly left qualitative data that indicated they agreed. This would have skewed the results and questions the complexity of the questionnaire.

Having qualitative data was a strength of the study as it allowed these discrepancies to be seen.

Blodgett et al (2005) questioned large sampled studies such as Lay Theories of Anorexia Nervosa (Furnham and Hume-Wright, 1992) and Public Perceptions of Binge Eating and its Treatment (Mond and Hay, 2008), regarding them as limited due to their questionnaire designs, as they did not use open ended questions.

Contrastingly, Studies by Dignon et al (2006) and Haworth-Hoepner (2000) did not use Likert scale type questionnaire but instead used interviews. This was thought to reduce bias but this also reduced the sample size dramatically.
As the sample size of this study was small, interviews may have benefitted the data collected and reduced bias, but due to the timescale available, a Likert scale type questionnaire was deemed more appropriate for this study.

The current study found that 45% of participants agreed that vegetarianism has no more of a link with eating disorders than a diet containing meat, this indicates a split in opinion which reflects the debate in current relevant literature. Nutrition scientist Mac Evilly (2001) suggested that having a restrictive eating pattern, such as vegetarianism may result in the development of a more serious eating disorder such as Anorexia Nervosa and Bulimia. This contrasts with Forestel et al (2012) who found vegetarians were no more restricted than omnivores and were often motivated by ethical concerns. Further findings of the present study confirms the previous research of Forestell et al (2012) with all female vegetarian participants disagreeing with the statement that vegetarian diets and eating disorders share similarities, stating that their vegetarian diet stemmed from animal welfare and not a health aspect. Interestingly, 45% of the non-vegetarian participants agreed with the statement that vegetarianism does share similarities with disordered eating, which is statistically significant. This supports research from a previous study which identifies that vegetarianism is more prevalent in individuals with current eating disorders than it is prior or post eating disorder, with 59.6% of individuals becoming vegetarians at least one year after eating disorder symptoms (Bardone-Cone et al, 2013). This shows that vegetarianism is not a risk factor for an eating disorder but an accompaniment and vegetarianism prior to an eating disorder may just be a lifestyle choice and not a precursor (Micahelak et al, 2012).
There may always be a difference in opinions between the different dietary preference groups for numerous reasons. Firstly, there is not enough literature available that can confirm or disprove that there is a link between vegetarianism and eating disorders. Secondly, non-vegetarians are not likely to know the exact reasons an individual becomes a vegetarian and if that individual did become a vegetarian in order to mask an eating disorder then they are also not likely to admit this. This is established by the National Collaborating Centre for Mental Health UK (2004) who explain most individuals with eating disorders will do all they can to mask their eating disorder.

Two participants explained it was their personal experiences as to why they think eating disorders and vegetarianism is linked. This may reflect research that suggests eating disorders are prevalent in student dietitians’ (Schwendler, 2014), which could allow the perceptions and beliefs of some student dietitians to be different to that of the general population.

The study found that more participants under the age of 25 years old agreed that a higher proportion of teenage girls becoming vegetarians is putting that population group at risk, compared with the older participants. The reason for these results are not identified but it could reflect the personal experience of the younger participants, if they have teenage friends or even personal experience of being a vegetarian whilst being young. Recurring qualitative data from these participants highlighted that ‘impressionable age’ was likely to be a reason that teenage girls may be more at risk of developing an eating disorder. As the participants that agreed with this statement were of a younger age, perhaps they are more aware of the pressure on young girls nowadays to be thin. Statistics by NSPCC
(2016) denotes that 1596 girls between the ages of 12 and 15 contacted ChildLine worried about their body image, confirming the modern pressures of society.

The results from two similar statements on the questionnaire provided surprisingly different results. With 48% of participants agreeing that vegetarians lead a healthier lifestyle and consider their health more than non-vegetarians, but only 13% of participants agreeing that vegetarians consider their appearance more than non-vegetarians.

The participants that agreed that vegetarians lead a healthier lifestyle suggested that this was dependent on that vegetarian individual and explained how vegetarian diets can be a lot more unhealthy than a diet containing meat if it is too restricted and did not meet all nutritional requirements. This reflects research by Gilbody et al (1999) who established that many young women were self-reported vegetarians for ‘health reasons’, but found that they also classed low body weight as ‘healthy’.

Qualitative results found the majority of participants that did agree did also said that all vegetarians do not have the same reasons for becoming vegetarians and it is more of an individual personality trait rather than diet related.

Dietary constraint is defined as a wilful restriction of food in order to control body weight (Herman and Mack, 1975) and with food restriction being one of the early signs of developing an eating disorder (National Institute of mental health, 2016), vegetarianism may only be a risk factor for an eating disorder if the initial reason for being a vegetarian is to lose weight, which was the main opinion by the participants in this study.
The quantitative results gained from Q7 and Q8 showed a split in opinions regarding vegetarianism and its link with eating disorders, this was reflected in the fact 55% of participants agreed that food avoidance was linked to disordered eating, but this was expected as it is a controversial topic. Studies such as Fisher et al (2014) suggest that the new diagnostic category ARFID is beneficial for the future for identifying and treating eating disorders as their data shows individuals with restrictive eating patterns are significantly underweight and are at greater risk of co-morbidities. These at-risk groups have been unidentified in the past as restrictive eating was never classed as disordered eating and other research does conclude that restrictive eating does not develop into disordered eating and it is more dependent on other variables, such as social pressure (Wertheim et al, 2000).

It is important that dietitians are aware of the possible link between restrictive eating and eating disorders as it is a dietitians duty to be able to identify if an individual is at risk or suffering from an eating disorder (Ozier and Henry 2010). Without being aware of the potential link between vegetarianism and eating disorders, they may assume an individual is following a healthy vegetarian diet, but as studies are suggesting more people are practising a restricted diet to mask their eating disorder (Klopp et al 2003). Dietitians should monitor these individuals and have the knowledge to decide what support, diet and educational treatment is most appropriate.

This study is beneficial as it made all student dietitians involved aware of the potential link and risks. One participant indicated she was unsure about the link between restrictive eating masking an eating disorder but stated that it was a good
point that they had not thought about before, thus making them more aware, which may spark more of an interest in the complex topic and may improve their future practice.

If individuals became more aware of the connections and causes regarding eating disorders, it would become clear the seriousness of these conditions and could be recognised earlier, reducing the risk of eating disorders developing further. Early intervention improves the speed of recovery, prevents serious psychological consequences, reduces the risk of malnutrition and therefore can save lives (Rohde et al, 2015).

The study highlighted the need for further research in this area, including more statistics and recognition of the potential link between vegetarianism, restrictive eating behaviour and eating disorders. Some of the limitations in the study reduce the accuracy of the study and therefore future research should aim for a larger study sample and could use interviews or other methods of data collection as to eliminate any confusion when self-completing questionnaires.

The relevance of this research in nutrition and dietetic practice is to highlight the potential link between vegetarianism and eating disorders and make student dietitians aware of the research already published that could increase their knowledge of the topic. As the participants may be working with patients with eating disorders in the future the research highlights the importance of being able to recognise disordered eating patterns in order to improve dietetic practice and clinical outcomes.
To conclude, the present study indicates that the beliefs and perceptions of the link between eating disorders and vegetarianism amongst student dietitians varies. Student dietitians with more personal experience of eating disorders believed there to be a link more than others. The younger students believed that vegetarian teenage girls are at higher risk of developing an eating disorder due to social pressures, however these results were not statistically significant.

The non-vegetarians believed there to be similarities between disordered eating and vegetarianism more than other dietary preferences, this was statistically significant. The results from qualitative data indicated that knowledge around the topic was not comprehensive.

It is important that dietitians have a knowledge around the topic to help improve future practice and more studies with more conclusive evidence is needed for this to be achieved.
Appendix 1.

Information Coversheet/consent for questionnaire

Title of project: Student dietitians perceptions and beliefs of the link between vegetarianism and eating disorders.

This study aims to look at student dietitian’s perceptions and beliefs of the link between vegetarianism and eating disorders.

- This is an invitation to you to join the study, and let you know what this would involve. The study is being organised by a final year BSc (Hons) Human Nutrition and Dietetic student at Cardiff metropolitan University.
- If you want to find out more about the project or need more information to help you make a decision about joining the project, please contact the study supervisor by the contact details at the bottom of this sheet.

Your participation in the research project:

What you have been asked.
Only people who are student dietitians at Cardiff Metropolitan are being invited to take part.

The study involves completion of a questionnaire designed to collect data and your participation in this study completely voluntary.

What happens if you join the study?
If you agree to participate in this study, we will ask you to complete an online questionnaire which is available via a link at the end of this information sheet.
The questionnaire will take approximately 10 minutes to complete. All questionnaires remain anonymous.
You may leave blank any questions you do not wish to answer however more useful data will be obtained if you complete the entire questionnaire.

What happens if you change your mind?
If you decide to join the study you can change your mind and stop part way through the completing the questionnaire. You will not be asked why you have stopped; your decision will be respected. By completing the questionnaire in full it implies your consent to the study.

Are there any risks?
There are no significant risks if you take part in the study.
Additional links and information of where to find any help related to the questions and study will be attached at the end of the questionnaire.

Any special precautions needed?
None.

What happens to the questionnaires results?
All data gathered will be analyzed using a computer programme. We will then be looking at the perceptions and beliefs of the link between vegetarianism and eating disorders.

Are there any benefits from taking part?
There are no direct benefits to you for taking part.

How we protect your privacy:
All the information gathered from you will be anonymous and confidential, your privacy will be respected.
All questionnaires are anonymous and will not require your name. There is no information on the questionnaire that could let anyone work out who you were.
At the end of the study, all information gathered will be destroyed.

Thank you.

Contact details:
Vicky Gould - Research Supervisor
Direct Dial – 02920 416883
Email – vjgould@cardiffmet.ac.uk

Link to questionnaire;
https://cardiffmet.eu.qualtrics.com/jfe/form/SV_3P8HHFtsgfeBtjL
Appendix 2 - Questionnaire

A Questionnaire to find out student dietitians perceptions and beliefs of the link between Vegetarianism and Eating Disorders.

Firstly indicate;
Your chosen type of diet (circle which applies)

Vegetarian      Non - vegetarian      Vegan
Pescatarian (Just fish)      Other (Please specify below)

The following are statements regarding eating disorders and vegetarianism; please indicate your beliefs by selecting how strongly you agree or disagree with the statements.

2- Vegetarianism has no more of a link with disordered eating than a diet containing meat (Circle which applies)

Strongly Agree  0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10  Strongly Disagree
Comments

3 – I believe that a vegetarian diet and disordered eating share some similarities. (Circle which applies)

Strongly Agree  0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10  Strongly Disagree
Comments
4 – A high proportion of teenage girls becoming vegetarians is putting this population group at a higher risk of developing an eating disorder. (Circle which applies)

Strongly Agree 0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 Strongly Disagree

Comments
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

5 - Vegetarians lead a healthier lifestyle and consider their health more than non-vegetarians. (Circle which applies)

Strongly Agree 0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 Strongly Disagree

Comments
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

6 – Vegetarians consider their appearance more than non-vegetarians. (Circle which applies).

Strongly Agree 1 – 2 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 10 Strongly Disagree

Comments
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

7 – Vegetarians could use their diet as a way of avoiding foods in certain situations. (Circle which applies)

Strongly Agree 0 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 Strongly Disagree

Comments
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
___________________________________________________________________
8 – Due to the restrictions needed on a vegetarian diet, it would be easier to hide an eating disorder than when on a normal diet. (Circle which applies).

Strongly Agree  0 - 1 - 2 - 3 - 4 - 5 - 6 – 7 – 8 – 9 - 10  Strongly Disagree

Comments

9 – Age
18-19
20-21
22-23
24-25
26-27
28-29
30-31
32-33
34-35
36-37
38-39
40-41
42-43
44-45

10 – Gender
Male
Female
### Appendix 3 - Code Book

<table>
<thead>
<tr>
<th>Variable name in full</th>
<th>Variable name shortened for SPSS</th>
<th>Coding Instructions</th>
<th>Type of Data</th>
</tr>
</thead>
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<tr>
<td>Q1. Indication of own type of diet</td>
<td>Own_diet</td>
<td>1 = Vegetarian 2 = Non-Vegetarian 3 = Vegan 4 = Pescatarian (Just fish) 5 = Other (please specify)</td>
<td>Nominal</td>
</tr>
<tr>
<td>Q2. Opinion whether vegetarianism has more of a link with eating disorders than a non-vegetarian diet</td>
<td>Veg_Link</td>
<td>1-10 Where 1 = Strongly Agree and 10 = Strongly Disagree</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Q3. Opinion of similarities between vegetarianism and Eating disorders</td>
<td>Veg_Sim</td>
<td>1-10 Where 1 = Strongly Agree and 10 = Strongly Disagree</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Q4. Opinion whether teenage girls are more at risk of Eating Disorders</td>
<td>Teen_Risk</td>
<td>1-10 Where 1 = Strongly Agree and 10 = Strongly Disagree</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Q5. Opinion of Vegetarians leading a healthier lifestyle than non-vegetarians.</td>
<td>Veg_Life</td>
<td>1-10 Where 1 = Strongly Agree and 10 = Strongly Disagree</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Q6. Opinions of vegetarians considering their appearance more than non-vegetarians.</td>
<td>Veg_appe</td>
<td>1-10 Where 1 = Strongly Agree and 10 = Strongly Disagree</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Q7. Opinions whether vegetarians use diet to avoid food.</td>
<td>Avoid</td>
<td>1-10 Where 1 = Strongly Agree and 10 = Strongly Disagree</td>
<td>Ordinal</td>
</tr>
<tr>
<td>Q8. Opinions whether vegetarians find it easier to hide Eating Disorders.</td>
<td>Veg_Hide</td>
<td>1-10 Where 1 = Strongly Agree and 10 = Strongly Disagree</td>
<td>Ordinal</td>
</tr>
</tbody>
</table>
| Q10. Gender | Gender 1 = Male  
|            | 2 = Female  
|            | Nominal    |
Appendix 4 – Raw Data
### Appendix 5 – SPSS Output

**Crosstabs**

#### Case Processing Summary

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#### Age * TR Agree Disagree Crosstabulation

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#### Chi-Square Tests

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<td>.942</td>
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A. 30 cells (100.0%) have expected counts less than 5. The minimum expected count is .21.

---

**Crosstabs**

#### Case Processing Summary

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#### Own_Diet * Veg_sim Crosstabulation

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<th>Ages</th>
<th>Ages</th>
<th>Unsure</th>
<th>Disagree</th>
<th>Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<td></td>
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<tr>
<td></td>
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<td>7</td>
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#### Chi-Square Tests

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<th>Value</th>
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A. 32 cells (100.0%) have expected counts less than 5. The minimum expected count is .14.
Appendix 6 – Ethics Approval Letter.

Dear Applicant,

Re: Application for Ethical Approval: Student dietitians perceptions and beliefs of the link between vegetarianism and eating disorders

Project Reference Number: 9243

Your ethics application, as shown above, was considered by the Health Care and Food Ethics Panel on 28/06/2017.

I am pleased to inform you that your application for ethical approval was APPROVED.

Minor issues may still need addressing before you commence any work – if so these will be listed below.

N/A

Where changes to the information sheet, consent form and/or procedures are deemed necessary, you must submit revised versions to the relevant ethics inbox. If you are a student, your supervisor must do this on your behalf.

**Note:** Failure to comply with any issues listed above will nullify this approval.

**Standard Conditions of Approval**

1. Your Ethics Application has been given a Project Reference number as above. This MUST be quoted on all documentation relating to the project (e.g. consent forms, information sheets), together with the full project title.

2. All documents must also have the approved University Logo and the Version number in addition to the reference and project title as above.

3. A full Risk Assessment must be undertaken for this proposal, as appropriate, and be made available to the Committee if requested.

4. Any changes in connection to the proposal as approved, must be referred to the Panel/Committee for consideration without delay quoting your Project Reference Number.

5. Any untoward incident which occurs in connection with this proposal must be reported back to the Panel without delay.

6. If your project involves the use of human samples, your approval is given on the condition that you or your supervisor notify the HTA Designated Individual of your intention to work with such material by completing the form entitled “Notification of Intention to Work with Human Samples”. The form must be submitted to the PD (Sean Duggan) BEFORE any activity on this project is undertaken.

This approval expires on 28/06/2018. It is your responsibility to reapply/request extension if necessary.

Yours sincerely,

[Signatory]

Chair of Department of Healthcare and Food Ethics Panel
Cardiff School of Health Sciences
Llandaff Campus
Western Avenue, Cardiff, CF5 2YB

PLEASE RETAIN THIS LETTER FOR REFERENCE
References.


