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University students’ understanding and opinions of eating disorders: A qualitative study

Short title: University students and eating disorders

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Abstract

Objective: To explore university students' beliefs and opinions of EDs, their knowledge of symptoms, treatment and help sources and how these are influenced by biological sex.

Design: A qualitative study, using semi-structured interviews analysed using inductive thematic analysis.

Setting: A University in the West Midlands, UK

Participants: Seven female and seven male university students.

Results: Analysis revealed six themes, each with subthemes: ED characteristics, causes, body image, seeking help, stigma and awareness. Students displayed poor awareness towards ED signs and symptoms, causes and help sources. Students were not stigmatising towards EDs, but many perceived them as a female problem and believed society to be stigmatising. Many referenced informal sources of information such as social media and expressed a desire for ED teaching. Sex did not have a significant influence on knowledge or opinions of EDs in this study, however there were some differences, for example some males were more likely to see EDs as a weakness and to perceive themselves as having low levels of knowledge.

Conclusions: University students show poor awareness of certain aspects of ED-MHL including help sources and symptom recognition. Although students were not stigmatising of EDs themselves, many perceived high levels of public stigma. This, alongside poor knowledge, may delay help-seeking. Campaigns educating students and the public about EDs

would aid earlier diagnosis, improving long-term outcomes. Further research into awareness and knowledge in other populations would be beneficial.

Keywords: Eating disorder, qualitative research, mental health literacy, social stigma, students, attitudes, health knowledge, opinions.

Article summary: Strengths and limitations of this study

- First qualitative exploration of knowledge and understanding of eating disorders in UK university students.
- Qualitative methodology allowed broad exploration and insight about perceptions of eating disorders in this at-risk population.
- Member validation and analyst triangulation with an experienced qualitative researcher strengthen the methodology.
- Some participants may have been hesitant to disclose their true views due to social desirability bias.

- Study was advertised as research about eating disorders, so participants could have volunteered because they have an interest and therefore more knowledge about eating disorders.

Introduction

Eating disorders (EDs) are a class of severe mental illnesses(1) that affect 1.25 million people in the UK(2). They are characterised by abnormal eating behaviours and attitudes that have a significant impact on the physical health of those suffering(3), resulting in complications including osteoporosis and cardiac arrhythmias(4). These go hand in hand with psychiatric comorbidities such as depression(5). For these reasons, one ED subtype, anorexia nervosa (AN), has the highest mortality rate of any psychiatric condition(6).

Notwithstanding the significant mortality and morbidity associated with EDs, statistics show it takes individuals an average of 91 weeks to realise they have an ED, on top of the 58 weeks they typically wait before presenting to their doctor(7). Recent data suggests a shorter duration of untreated eating disorder is associated with increased likelihood of remission(8). However, fewer than 20% of individuals who screen positive for an ED go on to receive treatment(9,10), highlighting a significant treatment gap, and leaving individuals vulnerable to suffering debilitating long-term outcomes.

This delay in health seeking is postulated to be due, in part, to poor mental health literacy (MHL) and the fear of stigma attached to EDs(11). MHL refers to an individual's 'knowledge and beliefs about mental disorders that aid the recognition, management or prevention of these disorders'(12). Studies show members of the public attribute EDs to personal shortcomings and perceive ED sufferers as vain and self-obsessed(13,14). This can result in high levels of self-stigma, whereby an ED sufferer turns public stigma towards themselves(15), lowering self-worth and self-efficacy, and further delaying help-seeking(16).

The ability to recognise ED behaviours has been shown to be a significant factor in improving early-intervention and help-seeking(17). Furthermore, an ED sufferer's social network has been shown to be fundamental in improving ED identification and encouraging treatment-seeking(18).

However, research indicates the public display poor MHL towards various mental illnesses(19), including EDs(20,21), suggesting the ability of the public to recognise an ED in themselves or in others is sub-optimal. In addition, eating disorder mental health literacy (ED-MHL) appears less systematically investigated than MHL relating to other mental illnesses, and therefore research in this area lacks the ability to inform relevant health promotion and early intervention programmes that seek to reduce the burden of these conditions(22,23).

In the UK, the highest incidence of EDs occurs in girls between 15 and 19 years of age(24), with symptom duration often lasting 5-8 years(2). Unsurprisingly, there is a high prevalence of EDs in university populations(25), where normalisation of ED behaviours such as restrictive dietary intake and overexercising alongside a loss of external accountability can exacerbate symptoms and lead to the development of new, unhealthy food behaviours(26). Furthermore, in a survey of UK university students by the ED charity Beat, 32% of students with an ED were diagnosed at university, however 69% reported difficulties accessing treatment(27).

Literature suggests that men constitute at least 25% of UK ED cases(28). However, research indicates the public expectation that EDs are primarily a female issue limits young men's ability to recognise their symptoms and delays them from seeking appropriate help(29,30). Sex bias is also indicated, with studies indicating that men hold more negative attitudes towards EDs(31,32) and have generally poorer MHL than females(20).

The majority of previous studies into ED-MHL have been quantitative, and have taken place outside of the UK, where different cultural norms, health systems and mental health education may mean results are not necessarily transferrable to the UK(33). Although useful for determining the general scope of ED knowledge and associated stigma, the pre-prepared questions in such studies do not allow for volunteering of further opinions not expressed in the questionnaires. Additionally, it does not allow in-depth exploration of individual beliefs and attitudes.

Therefore, there is a need for extensive qualitative research to be carried out in this area. Yet, existing UK qualitative literature into ED-MHL is lacking, only seeking responses from females(34), meaning difference in responses between males and females cannot be inferred. Some qualitative literature exists from other countries, but this literature is also incomplete, focussing only on ED causes(21), or solely on AN(35). Furthermore, none of these studies concentrated on at-risk populations such as university students.

Research focussed on university students, to determine if differences in understanding and opinions of EDs exist between these at-risk young males and females can give an insight into the ED-MHL of this population, identifying areas where greater education is needed to improve help-seeking and reduce stigma. This paper reports on a qualitative interview study which aimed to determine university students' ED-MHL, exploring beliefs and opinions of EDs and their knowledge of ED symptoms, treatment and sources of help. It also sought to determine the impact of sex on ED perceptions and knowledge.

Materials and methods

Participants

Participants were recruited from a convenience sample of English speaking University of Birmingham students(36), chosen purposively to ensure equal numbers of male and female participants were recruited(37). To investigate lay perceptions of EDs, students with a previous formal diagnosis of an ED were excluded, alongside students studying a healthcare degree or psychology, as they were assumed to have greater ED knowledge than other university students(38). To focus on UK perceptions, international students and international exchange students were also excluded.

Patient and public involvement

No patient involved

Recruitment

Participants were recruited via advertisements placed around the university campus and posted on a University of Birmingham Facebook group(39).

Participants who responded were emailed a participant information sheet and eligibility questionnaire to enable purposive sampling based on sex, and ensure any non-eligible individuals were excluded(37). Participant recruitment continued until data saturation was reached (Fig 1).

Fig 1: Participant recruitment process

Fig 1 legend: Individuals who responded contacted the researcher to enquire about the study. Non responders either did not return the eligibility questionnaire or did not confirm interest in the study. Five participants were not required as data saturation was reached.

Data collection

Data was collected using face to face, semi-structured, audio-recorded interviews(40). These took place in a private room in the University of Birmingham library during January and February 2020. No repeat interviews were undertaken. Written, informed consent was obtained from each participant prior to their interview.

All interviews were carried out by MM, a female, white British medical student intercalating in psychological medicine. Interview duration ranged between 20 and 37 minutes, with a mean of 28 minutes. The researcher did not know any participant prior to study initiation, and all were aware of the interviewer’s demographics as outlined in the participant information sheet, prior to their interview. Upon interview completion, each participant received a £15 Amazon voucher to thank them for their time.

An interview guide (supplementary information 1) of open-ended questions informed by relevant literature(34,41,42) was used to explore key areas of MHL(43), including help-seeking, stigma and the knowledge of ED symptoms, causes and treatments (see supplementary information 1). This ensured consistency across interviews and that appropriate topics were covered to answer the research question. The interview guide was piloted on participants known to the researcher who met the eligibility criteria to ensure questions were accessible to participants. Pilot data was not included in the study.

Data analysis

Following each interview, field notes were taken to contextualise interviews and reflect on the researcher's impact on the interviews(44). Interviews were transcribed verbatim by the researcher and listened to twice to ensure transcript accuracy. To establish participant anonymity and confidentiality, each was allocated a numerical ID used for data collection and analysis.

Data was thematically analysed using Braun and Clarke's six step process(45), as it allows rich interpretation of data. An inductive approach was taken, therefore analysis was data driven, rather than theory driven(46). Transcripts were read twice to ensure familiarisation. Open coding was then performed manually, and codes inputted into the software NVivo for clarity and organisation(47). As analysis progressed, codes were refined and sorted into themes and subthemes using an Excel spreadsheet, NVivo and thematic maps(48). This allowed codes to be compared between participants and between sexes.

To enhance the quality of the analytic process, investigator triangulation occurred(49). Two transcripts were coded independently by SG, an experienced qualitative researcher. MM and SG then met to discuss analysis and agree on themes, before meeting again to further refine and define themes. Furthermore, to ensure credibility of results, member validation

			Participant														N
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Characteristics		Age	19	18	19	22	20	19	21	21	22	21	18	21	19	26	18-26
	Sex	Male	✓				✓	✓					✓	✓	✓	✓	7
		Female		✓	✓	✓			✓	✓	✓	✓					7
	Ethnicity	White	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		12
		Asian														✓	1
		African Caribbean										✓					1
	Course	Life and environmental sciences					✓		✓								2
		Arts and law	✓		✓						✓		✓	✓			5
		Biomedical sciences		✓													1
		Engineering and physical sciences				✓										✓	2
		Social sciences						✓		✓		✓					3

occurred. Participants were sent their interview's main themes asked to confirm these reflected the intent of their responses. 11 participants responded confirming this was an accurate representation of their views(50). Data is reported in accordance with the consolidated criteria for reporting qualitative research (COREQ) checklist (supplementary information 2)(51).

It was not possible to involve patients or the public in the design, or conduct, or reporting, or dissemination plans of this research

Results

Seven male and seven female participants took part in the study. 86% were White British ethnicity. Participants' course characteristics and ages were varied (table 1).

Table 1: Participant characteristics

		Liberal arts and natural sciences													✓		1

Table 1 legend: Participant age ranged from 18-26. Equal numbers of male and female participants took part in the study and 86% of participants were of white British ethnicity. Participants studied a range of university courses, including arts and law and social sciences.

Six themes, each with subthemes, were interpreted from the data: ED characteristics, causes, body image, seeking help, stigma and awareness. Themes represent central attitudes and ideas discussed throughout interviews. Some reflect areas of the interview guide, however others, such as stigma, were mentioned by participants without directly being led by the interview guide. Fig 2 summarises the links between themes and the impact of sex on results.

Fig 2: Links between themes and impact of biological sex

Fig 2 legend: Each box contains one theme and associated subthemes. Links between themes are represented by a black line.

Themes are displayed with supporting quotations, presented with biological sex specific pseudonyms to maintain confidentiality. Superfluous text within quotations has been removed and is represented by an ellipsis […].

ED characteristics

Types of ED

All participants mentioned AN, and most were able to attempt a definition. Many participants also cited over-eating as an ED, however only three specifically defined binge eating disorder. Though 12 participants were able to name bulimia nervosa (BN), many were hesitant to define and describe it:

> 'I think most people have some kind of idea of what anorexia is, bulimia, I think it's more complicated' (David, 21)

Defining EDs

Many participants believed EDs to be a psychological issue and defined them as a mental illness. Furthermore, EDs were frequently recognised as a spectrum, a scale between disordered eating and a severe ED:

> 'I think they're almost like a spectrum, I think some people have a really bad eating disorder and it affects them in a really bad way but I think a lot of people can have unhealthy relationships with food that but they stay at a sort of stable weight but it's more of the mental thoughts they have about it' (Chelsea, 22)

Appearance

12 participants perceived EDs as a predominantly female problem, with few mentioning EDs in men. They were also frequently associated with younger people, believed to affect those of school and university age:

> 'Younger women are the main category, so teenagers to like early mid-twenties I'd say, so that captures students' (Rebecca, 21)

> 'If I see a guy and he's skinny […] I don't think there's any chance of it being an eating disorder, he's just skinny' (David, 21)

Numerous participants highlighted the idea that you do not have to be underweight to have an ED. However, the perception that individuals with EDs are 'skinny' or 'skeletal' was held by 13 participants, and many described the impact of EDs as severe, believing sufferers to appear 'ill-looking' and 'gaunt':

> 'So skinny that you can see their hip bones protruding, knee bones look massive in comparison to the rest of their leg because they're so big and like clothes hanging off them' (Katie, 19)

Traits

Vulnerable

Whilst the majority of participants recognised EDs as challenging and impactful, some male participants were more likely to associate EDs with vulnerability, perceiving sufferers as 'fragile':

> 'I'd see them as more fragile I think, I'd see them more [...] like a vase' (William, 19)

Obsessive

There was the view that individuals with EDs are obsessive and seeking perfection, with two students commenting on a 'type A' personality putting someone at increased risk of an ED (52):

> 'If you're quite neurotic so you're a bit strung, highly strung up maybe they're a perfectionist or someone really has to be yeah really controlling about things in life' (Callum, 26)

Control was mentioned by five participants, four of whom were female. EDs were seen as a coping mechanism, by which individuals can take control of aspects of their lives:

> 'They get some sort of, I wouldn't say enjoyment but satisfaction with having the control of food especially if they don't have the control of anything else' (Katie, 19)

Image conscious

Seven students believed ED sufferers hold a low self-worth, perceiving them to care a lot about their own image and what others thought of them:

> 'Lack of confidence as a trait would also make you a lot more sort of conscious of how you're seen' (Shaun, 19)

Signs and symptoms

Perceived signs and symptoms freely volunteered by participants are presented in table 2. Students were generally unaware of specific ED symptoms and which symptoms were associated with specific EDs. Some symptoms were recognised more than others, specifically under-eating and over-eating. Vomiting and binge eating and purging were also frequently mentioned, and all participants that recognised these symptoms associated them with BN. Despite seven participants describing EDs as visible illnesses with numerous physical signs, many perceived difficulties in recognising signs and symptoms, describing EDs as conditions that are not easy to spot:

> 'It's not really as apparent, we don't see people naked or in their underwear every day, you just assume someone's fine' (Danielle, 21)

Table 2: Perceived signs and symptoms of EDs

Signs and symptoms	Frequency stated	Supporting quotation
Binge eating and purging	8	'Bulimia is sort of binge eating then like purging it by making yourself throw up' (Shaun, 19)
Vomiting without binge eating	12	'The one where it makes you sick' (Chelsea, 22)
Calorie counting	4	'A person controls the amount of food they eat either by how many calories they have and they set like certain routines of how many calories they can have' (Katie, 19)
Odd food behaviours	3	'Weird food habits, cutting food into small pieces and like not chewing properly or taking too long to chew, hiding food' (Katie, 19)
Commenting about food	3	'They might like complain about something or like complain about the fact they haven't, oh I've ate such rubbish today, I've like had a bag of crisps today or oh yeah, it's like very trivial things that no one else cares about' (David, 21)
Fussy eating	2	'Often people are picky, picky eaters, but that might not just be them being a picky eater, it might sort of be a deep set in of not enjoying certain types of food' (Andrew, 19)
Under-eating	12	'You choose not to eat, you chose to eat very little' (Joshua, 20)
Not eating in-front of people	2	'Some people don't enjoy, or don't like eating in front of other people' (Andrew, 19)
Over-eating	8	'Eating disorders can also be at the other end of the scale when somebody would over-eat as well' (Abigail, 18)
Missing meals	3	'Avoiding things like mealtimes' (Abigail, 18)
Exercise	2	'If they over-eat the amount of calories that they've like set for themselves then they have to like exercise to work it off' (Katie, 19)
Weight loss	6	'Extreme weight gain or weight loss, so big changes in someone's life to do with weight or food' (Grace, 22)

Table 2 legend: Table 2 shows perceived signs and symptoms of EDs alongside frequency stated by participants and a supporting quotation.

Causes of EDs

Many male students were unaware of potential causes on initial questioning. Perceived causes, after prompting in many cases, are presented in table 3. Several students referenced internal factors such as a psychological comorbidity or low self-worth as major ED causes. Of the seven individuals who believed low self-worth could contribute, five were male.

Nevertheless, many students attributed social causes to be the most influential:

> 'Social factors would probably play a larger role' (Katie, 19)

Table 3: Perceived causes of EDs

Cause of EDs	Subcategory	Frequency stated	Supporting quotation
Internal factors	Body dysmorphia	5	'Them not seeing their body in the way that other people would see it so there's like that image that I think is used in loads of advertisements of a really skinny girl and she's looking in a mirror and it's like a much bigger reflection' (Katie, 19)
	Genetic	5	'I suppose if genetically you're inclined to develop an eating disorder then probably that would be just as influential' (Alicia, 21)
	Low self-worth	7	'The root cause is probably from my understanding is like this idea of self-loathing, self-hatred this idea of not liking yourself and wanting to change yourself' (Joe, 19)
	Family history	2	'I could imagine if I was born into a family that had a history of say mental illness and eating disorders, it might be, not necessarily that you've been passed on genetically but it might be easier for that family to develop problems similar to those they had in the past, which I guess would be easier to pass on to you, as a person' (Thomas, 18)
	Psychological comorbidity	10	'I think it seems entirely plausible like if you have a mental illness such as depression perhaps, through that you could develop an eating disorder as well' (Joshua, 20)
	Vicarious learning	2	'There's like the classic example of like passing from the, the mother to the daughter when she talks about like diet culture and everything, it can often become like instilled from a young age but subconsciously' (Abigail, 18)
External factors	Bullying	6	'Bullying, especially like younger kids who haven't really had a chance to feel confident in themselves, if they get bullied, especially in school, like even if you're like slightly overweight, not in a bad way, kids can be mean and say things and then that can lead to, especially in adolescence when you're, I think there's a lot of hormones and changes and you're like vulnerable, I think if people are bullied that can lead to eating disorders when people are younger' (Rebecca, 21)

	Life pressure	2	‘General stress, like pressure from external sources, so maybe work or something, or a big change in someone’s life, I think that can trigger any mental health issue’ (Grace, 22)
	Media pressure	12	‘I mean there’s a lot of very unhealthy representations in the media of what the perfect body looks like and I think that can be a sort of a fuel point for those issues’ (Joe, 19)
	Parental pressure	2	‘Sometimes it’s pressure from parents not in like, so I know some people that like their parents wanted them to be really academic but also I know some people’s parents have literally told them that they’re like fat and need to lose weight and stuff’ (Katie, 19)
	Traumatic life event	5	‘Sexual assault, I think some people might go to extremes to make themselves look undesirable so that they’re not victims again’ (Danielle, 21)
	University	5	‘People are at uni, I can imagine that’s such a big shift, you move away from like your family and you’re living by yourself, I can imagine that would probably be pretty easy, well pretty likely for something like that to develop’ (Thomas, 18)

Table 3 legend: Table 3 shows perceived causes of EDs alongside frequency stated and a supporting quotation.

Body image

Participants perceived poor body image as both an ED cause and a consequence of repeated pressure from the media. Many commented that poor body image was common, and referenced their own personal experience of a poor relationship with their body:

> ‘I think it affects lots of people, like sort of body dysmorphia in general, I think like in some kind of mild forms’ (Adam, 21)

‘The perfect body’

'The perfect body' was something that had been repeatedly presented to many participants from a young age, with individuals with this body type deemed more attractive to society and the opposite sex:

> 'If you don't look like that, or you're not like aiming to look like that […] then you're unhealthy or you're not good enough or you're not attractive […] because you have to fit into like one of the groups, one of the standards presented' (Grace, 22)

All students cited media pressure as a cause of poor body image, with many reflecting on increased pressure due to the rise in social media, resulting in a constant comparison of oneself against others:

> 'Because of social media, you're always comparing yourself to other people, I think people feel more in competition with other people all the time […] I don't think it's healthy on body image' (Rebecca, 21)

Many students believed females to be under greater pressure, citing increased female body representation in the media and sexist viewpoints towards female bodies as mechanisms for this. Ten participants referred to the 'female ideal' of being slim:

> ‘What you’d see in something like London fashion week, tall skinny models that would have potentially a thigh gap, a flat stomach, no stretch marks, not much cellulite’ (Katie, 19)

Contrastingly, the ‘male ideal’ was described as heavily muscular:

> ‘A six pack, like well-toned, just a good size of muscles like all over’ (Andrew, 19)

Male body image

Despite acknowledging that males also experience pressure to look a certain way, students generally inferred that males care less about image and are not bothered about how other people perceived them. This was supported by male participants being more likely to comment that body image worries did not personally affect them:

> ‘Myself I'm not too bothered, but men in general if I had to be very stereotypical, I would say men don’t care as much about their image’ (Joshua, 20)

Various students commented on the societal stigma they believe exists around men’s bodies, with male body image viewed as less inclusive and spoken about than female body image. Due to this, some participants commented that many males do not talk about their bodies:

> ‘The stereotype of not showing weakness may mean that they’re less willing to open up’ (Shaun, 19)

Seeking help

On the whole, many students were unaware of the help available for EDs, but with prompting 12 participants were able to suggest some sources of professional help. Seven participants recognised the importance of seeking social support. Many students commented on potential treatment barriers, including perceived negatives of medical treatment and worries about self-image.

Professional

Twelve participants recognised therapy as a potential treatment. Further sources of formal treatment included treatment in specialist hospitals and nasogastric feeding. Many participants, especially females, commented on issues with seeking medical treatment, including perceived lack of treatment availability and the belief that doctors would not take EDs seriously:

> ‘With the NHS they have so much on their plate and there’s underfunding and stuff so I just personally wouldn’t want to go there for them. And as well GPs can be a bit snappy and try and like rush you and stuff’ (Chelsea, 22)

Ten participants said they would be willing to seek professional help, the majority mentioned consulting their GP or seeking a therapist. Male participants were more likely to seek only professional support or seek social support after first pursuing professional support. Furthermore, some mentioned first researching online about what help was available for EDs:

> ‘Probably look on NHS website first I’m sure they’d probably say go to a doctor and then I’d probably get a referral from the doctor’ (Callum, 26)

Social

The majority perceived social support as vital in both recovery and maintaining recovery. Five participants mentioned greater willingness to seek social rather than professional support, highlighting the ability of the social network to encourage help-seeking:

> ‘I’d probably ask for someone’s advice on whether I should go to the doctor’ (Grace, 22)

Despite perceived benefits of seeking social support, many commented on potential barriers that would prevent them from seeking social support, including not wanting to bother others with their problems and a fear of being judged. All male participants worried about being perceived differently by peers:

> ‘If I suspected one of my friends of having an eating disorder I’d see them as fragile and delicate, I wouldn’t want the people close to me to see me as fragile and delicate cos I wouldn’t want people’s opinions to change about me’ (William, 19)

The desire to help those with an ED was emphasised by 13 participants, however six participants recognised that helping someone with an ED was often difficult. Participants were generally sympathetic, suggesting a need to be supportive and encourage those suffering to seek professional support:

> ‘I’d encourage them, and if they were like I want to get medical help I’d like come with them’ (Thomas, 18)

Notwithstanding the support offered, many participants predicated a subconscious change in behaviour that would come with knowing someone had an ED. Nine participants mentioned a need to act carefully around those with EDs, particularly in situations involving food. Five participants also recognised the need to maintain a sense of normality:

> ‘I’d want to be a lot more careful with how I acted around them but then again whilst I’d be a lot more careful I’d also very much try to act that nothing has changed, so around them I’d try and act exactly the same’ (William, 19)

Internal barriers

The extent that personal beliefs and coping mechanisms limited help-seeking was also discussed. Seven participants highlighted the struggles that come with seeking help, perceiving EDs as difficult to discuss, and help-seeking as embarrassing and scary:

> ‘I can imagine that would be a really hard conversation, to say like mate I think you might have an eating disorder, I wouldn’t want to hear that, I don’t think anyone would want to hear that’ (Thomas, 18)

The internalisation of one’s problems was mentioned by three participants. This came hand in hand with a perception that EDs are not a serious issue, and therefore something that could be easily dealt with by oneself. Furthermore, many participants held the belief that individuals with EDs may not want to recover, or may lack the intuition to realise they have a problem:

> ‘I imagine some people just don’t even know that they, it’s a problem for themselves and they could be putting themselves at risk’ (Grace, 22)

Recovery

Eleven participants believed it was possible to recover from an ED. Despite this, participants made frequent reference to the idea that the ED would remain with you, and that it would be easy to relapse. Ten participants commented on the ease of falling back into previous behaviours or thoughts:

> ‘I think it would be difficult for them to never have them same thoughts in their head again. So, I think the thoughts will always be there it just depends, they can probably learn to live with it rather than them let it take over their life’ (Chelsea, 22)

<u>Stigma</u>

The majority of participants recognised EDs, and mental health conditions in general, as highly publicly stigmatised.

Label

Some participants commented on the impact of EDs on image. Five students perceived EDs as conditions that are shamed within society, commenting that society has a tendency to label people with mental health issues:

> ‘I wouldn’t want it to be perceived as a part of my identity, I wouldn’t want to be known as the boy with an eating disorder rather than anything else about me, I wouldn’t want that to be what people sort of defined me as’ (Shaun, 19)

EDs being seen as a ‘weakness’ was mainly specified by male participants, with three participants stating this as a reason they would not tell anyone they had an ED:

> 'I think I'd find it hard to tell my friends about it as well, like show weakness rather than just coming across as someone who's laid back and calm' (Shaun, 19)

Taboo

A number of students saw EDs as conditions that are rarely discussed by society. Many held the perception that mental illnesses were 'taboo'. Additionally, six students commented on EDs being poorly understood within the community, seeing society as ignorant towards the seriousness of the conditions:

> 'I feel like for a long time it wasn't really recognised and therefore people didn't, if you had an eating disorder it was sort of why are you be being difficult rather than being like oh let's work, let's find a way to work around this' (Andrew, 19)

In addition, a number of students saw EDs as conditions that were 'difficult to relate to', citing this as a reason why many find it hard to understand EDs:

> 'If someone's feeling anxious they can talk to their friends about it, there'd be some level of empathy and them understanding that, I think it would be much harder to talk to a friend and expect them to, well have them understand an eating disorder, because it's not a shared thing' (David, 21)

<u>Awareness</u>

Throughout the interviews there was a general hesitancy and lack of awareness when discussing certain aspects of EDs.

Lack of knowledge

Ten participants, the majority of whom were male, perceived themselves to have poor knowledge about certain aspects of EDs. Many were hesitant to answer, and lacked confidence in their answers:

> 'I don't know a huge amount, so I definitely don't have great knowledge on it' (Callum, 26)

Furthermore, many participants stated their knowledge as 'assumptions' or 'clichés', with male participants particularly worried that their answers were incorrect or would be interpreted improperly:

> 'I don't want my opinions to come across like I know what I'm talking about almost, if you know what I mean' (Joshua, 20)

Sources

Nine participants mentioned knowing an ED sufferer, evidencing the frequently held perception that EDs are common. Many cited experiences of these individuals as sources of their knowledge, particularly around treatment and symptoms:

> 'I think now they're quite common, I feel like everyone knows someone who's struggled with an eating disorder' (Rebecca, 21)

Six participants mentioned being formally taught about EDs in school, however many reflected that these lessons were 'basic' and were unable to recollect what specifics they had been taught:

> 'We had like the basic kind of PSHE lessons about it but nothing that could have like helped anyone, or not enough I don't think' (Chelsea, 22)

The majority of participants cited informal sources such as social media and films as their sources of ED knowledge:

> 'A lot of what I think about eating disorders is from movies and TV shows, rather than fact' (Grace, 22)

However, some participants acknowledged that they were sceptical about the accuracy of this information. Furthermore, a number of students made comment about how the representation of EDs in the media, and their perceived commonness within the younger generation had made them sensitised to the signs and consequences of EDs:

> 'With the lens of social media […] when I first found out about eating disorders, at 14 or 15, made it seem almost, I don't want to say too ok but it almost normalised it to a point where I actually didn't realise for a little bit how serious an eating disorder was' (Thomas, 18)

Improving awareness

Seven participants commented on the need to improve ED teaching. For many, the need to educate individuals about the signs and symptoms and promote help-seeking was of particular importance:

> 'It flagged them up as being as issue but never really went into depth with what to do about them or how to act with someone who has those and so I found that I had to learn it for myself rather than learning from like lessons and things' (Shaun, 19)

Despite the perceived need for better teaching, a number of students commented on positive steps in society that are improving ED awareness. Many commented on improving body representation in the media and five students commented on sources of positive ED representation, believing this to be beneficial to those suffering.

> 'I got a lot of knowledge from social media and stuff like that, a lot of it really positive stuff, you know hashtags on twitter or stuff on Tumblr, people sharing their experiences and stories and it's all been from a very supportive, positive light' (Thomas, 18)

Discussion

Main findings

This study, to the best of the author's knowledge, is the first UK qualitative study exploring ED-MHL in university students. Generally, the study highlighted the university students interviewed had a broad awareness of EDs, however there were areas where knowledge was lacking, even in this highly educated group.

Whilst many students were able to state AN and BN as EDs, many were hesitant to define and describe BN, and only a few were able to suggest further ED types. Furthermore, though many students were able to name some signs and symptoms when prompted, there was a great deal of uncertainty, and many struggled to link particular symptoms to specific EDs. The findings of this study are in keeping with a previous quantitative study of members of the public, in which participants showed difficulty discriminating between ED diagnoses(53). There was no apparent difference in ED identification between sexes, in contrast to a previous vignette study of Canadian post-secondary students, in which males had greater difficulty identifying ED diagnoses(54). Awareness of ED symptoms is important, as poor symptom recognition is associated with reduced likelihood of help-seeking, and increased risk of long-term outcomes(55,56). Many students in this study perceived EDs as a female problem. This perception was also reported in a previous qualitative study of young people, who also believed AN to be a female issue(35). EDs are already considered underdiagnosed in men(57), therefore this belief, in this at risk population, can result in young men being less likely to recognise their symptoms as indicative of an ED, and in them being less likely to seek help(30).

The greatest perceived cause of EDs was media pressure. These results are similar to a previous qualitative study in members of the public, in which media-ideals were a major perceived cause of EDs(21). Furthermore, many participants made reference to the 'thin-ideal' presented to young women in the media. This perception is common, with previous research in UK students highlighting how a desire for a thin, often unattainable body type is associated with ED development(58).

Although participants in this study did not generally hold stigmatising attitudes towards EDs, several perceived EDs as highly stigmatised in the community. This perception is in line with previous studies, which have shown public attitudes towards EDs are highly conductive to stigma(14,59). Higher educational status is correlated with liberal views towards mental illness, which may explain the low levels of stigmatisation apparent in the participants of this study(60). Many students cited fear of public stigma as a reason for not seeking help, further enhancing the idea that fear of public stigma is a major cause of delayed help-seeking(11). Previous studies focussed on ED stigma in university students have highlighted significant sex bias, with males exhibiting higher ED stigma than females(31,61). The results of this study are not in keeping with this literature, as differences in stigmatising viewpoints were not as apparent between male and female participants, though some differences were observed.

Encouragingly, the majority of participants said they would seek professional help for an ED; however, many were unsure of what help is available, and many made comments about perceived negatives of professional support, such as not being taken seriously. These worries are in keeping with previous research(62) and could act as an explanation as to why those with EDs take so long to seek treatment(8). Most participants expressed sympathy and a desire to help those with an ED, and many recognised the importance of social support, which has been shown to be highly influential in ED recovery(63).

Many participants perceived themselves as having poor or inaccurate knowledge. With this in mind, the majority of participants referenced informal sources such as social media as their main informants, similarly to recent quantitative research in Italian students(64). However, these sources of ED information are likely to be damaging and inaccurate(65,66). Students in a previous Australian study highlighted a desire for greater ED teaching in schools(54), a sentiment similarly expressed by participants of this study, many of whom perceived their ED teaching as inadequate.

Previous research in members of the public showed significantly poorer MHL in male participants(60). Contrary to this, differences in the ED-MHL between the male and female participants of this study was not significantly apparent. However, there were some disparities. Male participants were more likely to perceive themselves to have low levels of knowledge and appeared more reluctant to seek social support, making more reference to perceived social stigma, such as being perceived differently by their peers.

Strengths and limitations

To the best of the authors' knowledge, this study is the first in-depth, qualitative exploration of knowledge and understanding of EDs in UK university students. This is a major strength of the research as the interviews enabled broad exploration of knowledge and enable further insight into individual perceptions of EDs and beliefs about stigma and treatment barriers in a highly specific, at-risk population. The use of member validation and analyst triangulation with an experienced qualitative researcher further strengthens the study. Data saturation was reached with 14 participants which reflects recommended sample sizes in a study of this type(67).

However, there are a number of limitations. The study was advertised as looking at EDs, therefore participants could have volunteered because they had a greater interest or perceived themselves to have greater ED knowledge. Furthermore, some participants may have been reluctant to disclose their true views about EDs due to social desirability bias(68), and may have held more stigmatising viewpoints than was apparent from interviews. Participants' lack of awareness in certain areas may reflect this bias and therefore they may have been reluctant to discuss answers they knew may have been rooted in stereotypical assumptions. Methods to minimise the impact of social desirability bias, such as self-administered questionnaires may be beneficial for future research(69).

Research and policy recommendations

This study, alongside others, highlights there are poor levels of ED knowledge in this population in certain areas, including symptom recognition and awareness of treatment options. Further research in this at-risk population using vignette studies may be beneficial to draw further inferences about individual perceptions about EDs.

Furthermore, this study also emphasised a desire from participants for greater ED teaching. Therefore, ED educational campaigns within schools or universities would be crucial to improving awareness of symptoms and treatments and may encourage earlier help-seeking and improve treatment uptake in this at-risk group. Additionally, university, school and college welfare services need to be suitably prepared to support individuals with EDs. Improving ED education in university and school staff, through courses such as Beat's 'bridging the gap', can increase early detection of EDs and ensure individuals with EDs are given the support they need(70).

Despite anti-stigma campaigns such as Beat's 'eating disorder awareness week'(71), participants still perceived EDs as stigmatised within the community. There is a need for research into the efficacy of ED anti-stigma campaigns to determine which methods work, allowing for more successful future campaigns. Findings from a small-scale trial suggest the delivery of information emphasising the biological basis of EDs can help reduce stigmatising attitudes towards EDs(72), hence further research into provision of this information would be beneficial. There is also a need for research involving participants of different educational levels and ages. This would be more indicative of public knowledge and understanding and would help inform educational and anti-stigma campaigns targeted at a broader audience.

The perception of EDs as a ‘female issue’ is still a major problem, and therefore anti-stigma campaigns targeted at males may be useful to address the sex-specific stigma associated with EDs and improve symptom recognition and help-seeking in men.

Conclusions

This study demonstrates the gaps in knowledge and perceived stigma surrounding EDs in a group of UK university students. There is a need for health campaigns targeted at at-risk, younger individuals to better educate them about EDs, including information about symptoms and treatment options to better aid recognition and improve help-seeking, with the hope of lowering the significant treatment gap apparent in these conditions. Further research is necessary to better determine the ED-MHL of the general public and to develop effective methods of tackling the stigma surrounding EDs and other mental health conditions.

Declarations

Ethics statement: Ethical approval was granted by the BMedSc Population Sciences and Humanities Internal Ethics Review Committee at the University of Birmingham, Reference: IREC2019/Student 1638594. All methods were performed in accordance with the appropriate guidelines and regulations. Written informed consent was obtained from all participants.

Consent for publication: All participants provided written, informed consent. All data is de-identified within the report.

Availability of data and materials: The datasets generated and/or analysed during the current study are not publicly available due to the qualitative nature of the research. However, they are available from the corresponding author on reasonable request.

Competing interests: None declared.

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Author contributions: MM designed the study, wrote the study protocol, obtained ethical approval, undertook recruitment, carried out interviews, analysed the data and produced the final manuscript. SG provided expert supervision and contributed to the study design, protocol and analysis.

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References

1. Klump KL, Bulik CM, Kaye WH, Treasure J, Tyson E. Academy for eating disorders position paper: Eating disorders are serious mental illnesses. Int J Eat Disord. 2009;42(2):97–103.

2. Statistics for Journalists [Internet]. Beat. [cited 2019 Oct 13]. Available from: https://www.beateatingdisorders.org.uk/media-centre/eating-disorder-statistics

3. American Psychiatric Association, editor. Diagnostic and statistical manual of mental disorders: DSM-5. 5. ed. Washington, DC: American Psychiatric Publishing; 2013. 947 p.

4. Meczekalski B, Podfigurna-Stopa A, Katulski K. Long-term consequences of anorexia nervosa. Maturitas. 2013 Jul 1;75(3):215–20.

5. Kask J. Mortality in Women With Anorexia Nervosa: The Role of Comorbid Psychiatric Disorders. Vol. 78. 2016. 910–920 p.

6. Arcelus J. Mortality Rates in Patients With Anorexia Nervosa and Other Eating Disorders: A Meta-analysis of 36 Studies. Arch Gen Psychiatry. 2011 Jul 1;68(7):724.

7. BEAT. delaying-for-years-denied-for-months.pdf [Internet]. BEAT; [cited 2019 Oct 13]. Available from: https://www.beateatingdisorders.org.uk/uploads/documents/2017/11/delaying-for-years-denied-for-months.pdf

8. Austin A, Flynn M, Richards K, Hodsoll J, Duarte TA, Robinson P, et al. Duration of untreated eating disorder and relationship to outcomes: A systematic review of the literature. Eur Eat Disord Rev [Internet]. [cited 2021 Feb 8];n/a(n/a). Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/erv.2745

9. Fitzsimmons-Craft EE, Balantekin KN, Eichen DM, Graham AK, Monterubio GE, Sadeh-Sharvit S, et al. Screening and offering online programs for eating disorders: Reach, pathology, and differences across eating disorder status groups at 28 U.S. universities. Int J Eat Disord. 2019;52(10):1125–36.

10. Kazdin AE, Fitzsimmons-Craft EE, Wilfley DE. Addressing critical gaps in the treatment of eating disorders: KAZDIN et al. Int J Eat Disord. 2017 Mar;50(3):170–89.

11. Ali K, Farrer L, Fassnacht DB, Gulliver A, Bauer S, Griffiths KM. Perceived barriers and facilitators towards help-seeking for eating disorders: A systematic review. Int J Eat Disord. 2017;50(1):9–21.

12. Jorm AF, Korten AE, Jacomb PA, Christensen H, Rodgers B, Pollitt P. “Mental health literacy”: a survey of the public’s ability to recognise mental disorders and their beliefs about the effectiveness of treatment. Med J Aust. 1997 Feb 1;166(4):182–6.

13. Crisp AH, Gelder MG, Rix S, Meltzer HI, Rowlands OJ. Stigmatisation of people with mental illnesses. Br J Psychiatry. 2000 Jul;177(1):4–7.

14. Mond JM, Robertson-Smith G, Vetere A. Stigma and eating disorders: Is there evidence of negative attitudes towards anorexia nervosa among women in the community? J Ment Health. 2006 Jan;15(5):519–32.

15. Wingfield N, Kelly N, Serdar K, Shivy VA, Mazzeo SE. College students' perceptions of individuals with anorexia and bulimia nervosa. Int J Eat Disord. 2011 May;44(4):369–75.

16. Dimitropoulos G, Freeman VE, Muskat S, Domingo A, McCallum L. "You don't have anorexia, you just want to look like a celebrity": perceived stigma in individuals with anorexia nervosa. J Ment Health. 2016 Jan 2;25(1):47–54.

17. Wright A, Jorm AF, Harris MG, McGorry PD. What's in a name? Is accurate recognition and labelling of mental disorders by young people associated with better help-seeking and treatment preferences? Soc Psychiatry Psychiatr Epidemiol. 2007 Mar;42(3):244–50.

18. Vogel DL, Wade NG, Wester SR, Larson L, Hackler AH. Seeking help from a mental health professional: The influence of one's social network. J Clin Psychol. 2007 Mar;63(3):233–45.

19. Jorm AF, Barney LJ, Christensen H, Highet NJ, Kelly CM, Kitchener BA. Research on Mental Health Literacy: What we know and what we Still Need to know. Aust N Z J Psychiatry. 2006 Jan;40(1):3–5.

20. Gibbons RJ, Thorsteinsson EB, Loi NM. Beliefs and attitudes towards mental illness: an examination of the sex differences in mental health literacy in a community sample. PeerJ. 2015 Jun 9;3:e1004.

21. Blodgett Salafia EH, Jones ME, Haugen EC, Schaefer MK. Perceptions of the causes of eating disorders: a comparison of individuals with and without eating disorders. J Eat Disord [Internet]. 2015 Sep 15 [cited 2019 Dec 7];3. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4570226/

22. Mond JM. Eating disorders "mental health literacy": an introduction. J Ment Health. 2014 Apr;23(2):51–4.

23. Bullivant B, Rhydderch S, Griffiths S, Mitchison D, Mond JM. Eating disorders "mental health literacy": a scoping review. J Ment Health. 2020 Feb 10;1–14.

24. Micali N, Hagberg KW, Petersen I, Treasure JL. The incidence of eating disorders in the UK in 2000–2009: findings from the General Practice Research Database. BMJ Open. 2013;3(5):e002646.

25. Royal College of Psychiatrists. Mental health of students in higher education [Internet]. London; 2011 Sep [cited 2020 Mar 4] p. 97. Report No.: CR166. Available from: https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/college-report-cr166.pdf?sfvrsn=d5fa2c24_2

26. Goldschen L, Lundblad W, Fertig AM, Auster LS, Schwarzbach HL, Chang JC. Navigating the university transition among women who self-report an eating disorder: A qualitative study. Int J Eat Disord. 2019;52(7):795–800.

27. Universities [Internet]. Beat. [cited 2020 Mar 25]. Available from: https://www.beateatingdisorders.org.uk/get-involved/universities

28. Sweeting H, Walker L, MacLean A, Patterson C, Räisänen U, Hunt K. Prevalence of eating disorders in males: a review of rates reported in academic research and UK mass media. Int J Mens Health [Internet]. 2015 [cited 2020 Mar 4];14(2). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4538851/

29. MacLean A, Sweeting H, Walker L, Patterson C, Räisänen U, Hunt K. “It’s not healthy and it’s decidedly not masculine”: a media analysis of UK newspaper representations of eating disorders in males. BMJ Open. 2015 May 1;5(5):e007468.

30. Dearden A, Mulgrew KE. Service Provision for Men with Eating Issues in Australia: An Analysis of Organisations’, Practitioners’, and Men’s Experiences. Aust Soc Work. 2013 Dec;66(4):590–606.

31. Schoen E, Brock R, Hannon J. Gender bias, other specified and unspecified feeding and eating disorders, and college students: a vignette study. Eat Disord. 2019 May 4;27(3):291–304.

32. McLean SA, Paxton SJ, Massey R, Hay PJ, Mond JM, Rodgers B. Stigmatizing attitudes and beliefs about bulimia nervosa: Gender, age, education and income variability in a community sample: Stigmatizing Attitudes and Beliefs About Bulimia. Int J Eat Disord. 2014 May;47(4):353–61.

33. World Health Organization, World Health Organization, editors. Mental health atlas 2017. Geneva, Switzerland: World Health Organization; 2018. 62 p.

34. A H, S B. To what Extent do the Public Need Educating about Eating Disorders? J Obes Eat Disord [Internet]. 2016 [cited 2019 Dec 7];02(02). Available from: http://obesity.imedpub.com/to-what-extent-do-the-public-need-educating-about-eating-disorders.php?aid=17628

35. Benveniste J, Lecouteur A, Hepworth J. Lay Theories of Anorexia Nervosa: A Discourse Analytic Study. J Health Psychol. 1999 Jan 1;4(1):59–69.

36. Convenience Sample. In: The SAGE Encyclopedia of Qualitative Research Methods [Internet]. 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc.; 2008 [cited 2020 Mar 12]. Available from: http://methods.sagepub.com/reference/sage-encyc-qualitative-research-methods/n68.xml

37. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Adm Policy Ment Health. 2015 Sep;42(5):533–44.

38. Rababah JA, Al-Hammouri MM, Drew BL, Aldalaykeh M. Health literacy: exploring disparities among college students. BMC Public Health [Internet]. 2019 Oct 29 [cited 2019 Dec 10];19. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6819582/

39. (2) Fab N Fresh - New [Internet]. [cited 2019 Oct 16]. Available from: https://www.facebook.com/groups/470776866402274/

40. Gill P, Stewart K, Treasure E, Chadwick B. Methods of data collection in qualitative research: interviews and focus groups. Br Dent J. 2008 Mar;204(6):291–5.

41. Cadge C, Connor C, Greenfield S. University students' understanding and perceptions of schizophrenia in the UK: a qualitative study. BMJ Open. 2019 Apr;9(4):e025813.

42. Mond JM, Arrighi A. Gender differences in perceptions of the severity and prevalence of eating disorders. Early Interv Psychiatry. 2011;5(1):41–9.

43. Jorm AF. Mental health literacy: Empowering the community to take action for better mental health. Am Psychol. 2012 Apr;67(3):231–43.

44. Phillippi J, Lauderdale J. A Guide to Field Notes for Qualitative Research: Context and Conversation. Qual Health Res. 2018;28(3):381–8.

45. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006 Jan;3(2):77–101.

46. Braun V, Clarke V. Successful qualitative research: a practical guide for beginners. Los Angeles: SAGE; 2013. 382 p.

47. Wong L. Data Analysis in Qualitative Research: A Brief Guide to Using Nvivo. Malays Fam Physician Off J Acad Fam Physicians Malays. 2008 Apr 30;3(1):14–20.

48. Wheeldon J, Faubert J. Framing Experience: Concept Maps, Mind Maps, and Data Collection in Qualitative Research. Int J Qual Methods. 2009 Sep;8(3):68–83.

49. Carter N, Bryant-Lukosius D, DiCenso A, Blythe J, Neville AJ. The use of triangulation in qualitative research. Oncol Nurs Forum. 2014 Sep;41(5):545–7.

50. Birt L, Scott S, Cavers D, Campbell C, Walter F. Member Checking: A Tool to Enhance Trustworthiness or Merely a Nod to Validation? Qual Health Res. 2016 Nov;26(13):1802–11.

51. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007 Dec 1;19(6):349–57.

52. Type A and Type B Personality Theory | Simply Psychology [Internet]. [cited 2020 May 11]. Available from: https://www.simplypsychology.org/personality-a.html

53. Darby AM, Hay PJ, Mond JM, Quirk F. Community recognition and beliefs about anorexia nervosa and its treatment. Int J Eat Disord. 2012 Jan;45(1):120–4.

54. Armstrong LL, Young K. Mind the gap: Person-centred delivery of mental health information to post-secondary students. Psychosoc Interv. 2015 Aug 6;24(2):83–7.

55. Gratwick-Sarll K, Mond J, Hay P. Self-Recognition of Eating-Disordered Behavior in College Women: Further Evidence of Poor Eating Disorders “Mental Health Literacy”? Eat Disord. 2013 Jul;21(4):310–27.

56. Early Intervention Strategy [Internet]. Beat. [cited 2020 May 4]. Available from: https://www.beateatingdisorders.org.uk/early-intervention-strategy

57. Strother E, Lemberg R, Stanford SC, Turberville D. Eating Disorders in Men: Underdiagnosed, Undertreated, and Misunderstood. Eat Disord. 2012 Oct;20(5):346–55.

58. Ahern AL, Bennett KM, Hetherington MM. Internalization of the Ultra-Thin Ideal: Positive Implicit Associations with Underweight Fashion Models are Associated with Drive for Thinness in Young Women. Eat Disord. 2008 Jul 4;16(4):294–307.

59. Crisp A. Stigmatization of and discrimination against people with eating disorders including a report of two nationwide surveys. Eur Eat Disord Rev. 2005;13(3):147–52.

60. Angermeyer MC, Dietrich S. Public beliefs about and attitudes towards people with mental illness: a review of population studies. Acta Psychiatr Scand. 2006;113(3):163–79.

61. Bannatyne AJ, Stapleton PB. Attitudes towards anorexia nervosa: volitional stigma differences in a sample of pre-clinical medicine and psychology students. J Ment Health. 2017 Sep 3;26(5):442–8.

62. Rance N, Clarke V, Moller N. The anorexia nervosa experience: Shame, Solitude and Salvation. Couns Psychother Res. 2017;17(2):127–36.

63. Linville D, Brown T, Sturm K, McDougal T. Eating Disorders and Social Support: Perspectives of Recovered Individuals. Eat Disord. 2012 May 1;20(3):216–31.

64. Napolitano F, Bencivenga F, Pompili E, Angelillo IF. Assessment of Knowledge, Attitudes, and Behaviors toward Eating Disorders among Adolescents in Italy. Int J Environ Res Public Health [Internet]. 2019 Apr [cited 2020 May 12];16(8). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6518148/

65. Media portrayal of eating disorders ‘damaging’ | Nursing in Practice [Internet]. [cited 2020 May 4]. Available from: https://www.nursinginpractice.com/article/media-portrayal-eating-disorders-damaging

66. To The Bone is wrong in its portrayal of anorexia – by glamourising such a visible illness, it dangerously misses the point [Internet]. The Independent. 2017 [cited 2020 May 4].

Available from: http://www.independent.co.uk/voices/to-the-bone-anorexia-lily-collins-mental-health-awareness-thinspiration-pro-ana-a7842581.html

67. Morse JM. Determining Sample Size. Qual Health Res. 2000 Jan 1;10(1):3–5.

68. Social Desirability Bias. In: The SAGE Encyclopedia of Social Science Research Methods [Internet]. 2455 Teller Road, Thousand Oaks California 91320 United States of America: Sage Publications, Inc.; 2004 [cited 2019 Nov 2]. Available from: http://methods.sagepub.com/reference/the-sage-encyclopedia-of-social-science-research-methods/n932.xml

69. Bergen N, Labonté R. “Everything Is Perfect, and We Have No Problems”: Detecting and Limiting Social Desirability Bias in Qualitative Research. Qual Health Res. 2020 Apr;30(5):783–92.

70. University Staff [Internet]. Beat. [cited 2020 May 12]. Available from: https://www.beateatingdisorders.org.uk/training-cpd/university-staff

71. Eating Disorders Awareness Week [Internet]. [cited 2020 May 4]. Available from: https://www.beateatingdisorders.org.uk/edaw

72. Bannatyne AJ, Abel LM. Can we fight stigma with science? The effect of aetiological framing on attitudes towards anorexia nervosa and the impact on volitional stigma. Aust J Psychol. 2015;67(1):38–46.

Supplementary information

Supplementary information 1

File name: S1 – Interview guide

File format: .docx

Title of data: Interview guide

Description of data: Participant interviews were centred around the interview guide which covered key areas of mental health literacy including help-seeking, stigma and the knowledge of ED symptoms, causes and treatments.

Supplementary information 2

File name: S2 – COREQ checklist

File format: .docx

Title of data: COREQ checklist

Description of data: Evidence that this qualitative study has been reported in accordance with the COREQ criteria.

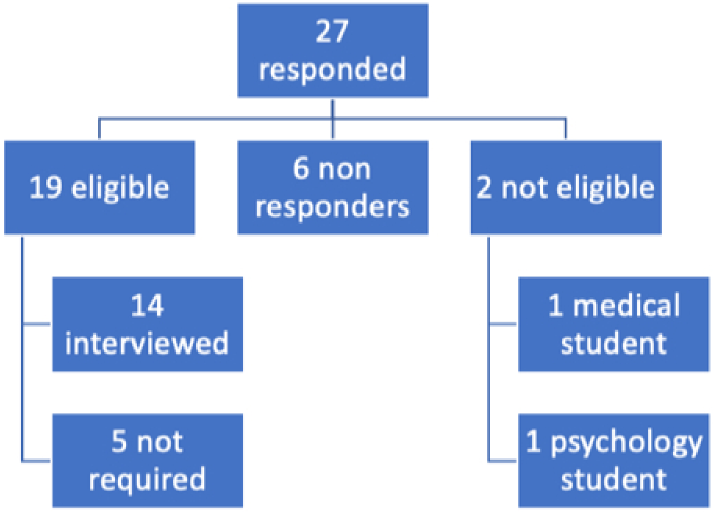

Fig 1: Participant characteristics

54x39mm (300 x 300 DPI)

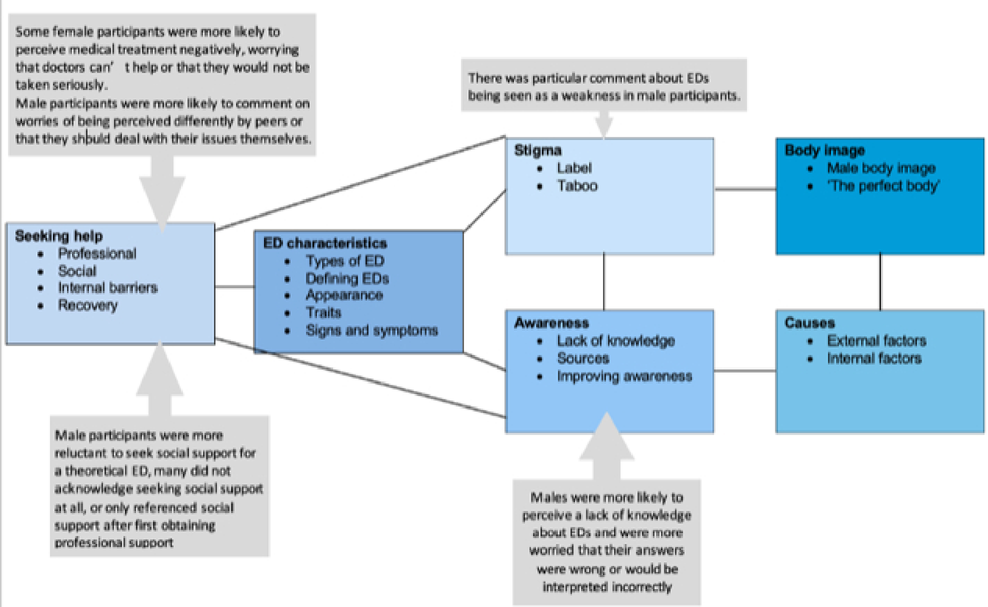

Fig 2: Links between themes and impact of biological sex

54x33mm (300 x 300 DPI)

University students' understanding and opinions of eating disorders: A qualitative study

Additional file 1: Interview guide

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Interview topic guide

Introduction

- Introduce self, outline nature of research and length of interview
- Go through consent form, reiterate that the interview focuses around eating disorders so may involve sensitive topics
    - Ensure they understand they can stop the interview at any time and don't have to answer anything they don't feel comfortable doing
- Obtain verbal informed consent and written consent
- Check they are happy to begin
    - Reiterate there is no wrong answer to any question

Understanding of the term 'eating disorder'

- What do you understand by the term 'mental illness'?
- What do you understand by the term 'eating disorder'?
    - Probe: How is this different to other mental illnesses?
    - Probe: Understanding of different types i.e. anorexia nervosa or bulimia nervosa

Knowledge of eating disorders

- Do you know any of the symptoms of eating disorders?
    - Probe: Symptoms for each type they know about
    - Probe: Characteristics of an eating disorder sufferer
        - Probe: Personality type
        - Probe: How would they feel?
- Are you aware of any of the causes of EDs?
    - Probe: Contribution of social factors, personality, genetics, environment
        - Probe each one
    - Probe: How common do you think eating disorders are?
- Do you know what the treatments are for an eating disorder?
    - Probe: Therapy, inpatient stays, social support
    - Probe: Do you think there would be any difficulties in treatment?
- Do you think a person with an ED is able to recover?
    - Probe: Relapse
    - Probe: Do you think people can ever make a full recovery?
    - Probe: Would it be distressing to have an eating disorder?
- If you suspected a friend had an eating disorder, what would you do?
    - Probe: Role of GP/friends/family
- If you suspected you had an ED, would you be happy to seek help?
    - Probe: Is there anything that would stop you seeking help?
    - Probe: Stigma

Conclusion

- Is there anything else you would like to add about eating disorders or your own experiences?
- Thank participant
- They will receive amazon e-giftcard via their student email

Supplementary information 2: COREQ checklist

Research item	Guide question/description	Result and location in manuscript (section, page number)
Domain 1: Research team and reflexivity		
Personal characteristics		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	MM (data collection, page 7)
2. Credentials	What were the researcher's credentials e.g. PhD, MD	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)
3. Occupation	What was their occupation at the time of the study?	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)
4. Gender	Was the researcher male or female?	Female (data collection, page 7)
5. Experience and training	What experience or training did the researcher have?	Degree content included study of qualitative research methods (data collection, page 7)
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	No participants were known to the researcher prior to study commencement (data collection, page 7)
7. Participant knowledge of the interviewer	What did the participants know about the researcher? E.g. personal goals, reasons for doing the research	Participants were aware of the researcher's demographics as they were outlined in the participant information sheet. This informed participants the interviewer was a fourth-year medical student conducting the project as part of their intercalated degree in Psychological Medicine (data collection, page 7)
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? E.g. bias, assumption, reasons and interests in the research project	Participants were aware the interviewer was a medical student conducting the research as part of her Psychological Medicine intercalation. Participants were informed the study was looking at eating disorders (EDs) as per the participant information sheet (data collection, page 7)
Domain 2: Study design		
Theoretical framework		
9. Methodological orientation and theory	What methodological orientation was stated to underpin the study? E.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Open coding with inductive thematic analysis (data analysis, page 8)
Participant selection		
10. Sampling	How were participants selected? E.g. purposive, convenience, consecutive, snowball	Purposive sampling based on gender from a convenience sample of University of Birmingham students (participants, page 6)
11. Method of approach	How were participants approached? E.g. face-to-face, telephone, mail, email	The study was advertised via advertisements placed around campus and online via Facebook. Interested participants were sent a participant information sheet and eligibility questionnaire (recruitment, page 6)
12. Sample size	How many participants were in the study?	Fourteen (results, page 9)

13. Non-participation	How many people refused to participate or dropped out? Reasons?	Six participants were lost to follow up and did not return the eligibility questionnaire or arrange and interview. 5 participants were not required as data saturation was reached (recruitment, page 6 and fig 1)
Setting		
14. Setting of data collection	Where was the data collected? E.g. home, clinic, workplace	Data was collected in private rooms in the University of Birmingham Library (data collection, page 7)
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	No.
16. Description of sample	What are the important characteristics of the sample? E.g. demographic data, date	Seven males and seven females. The majority were White British ethnicity. A wide variety of courses were studied, and students ranged in age from 18 to 26 (results, page 9)
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Interviews were semi-structured using a topic-guide. This was piloted on individuals known to the researcher who met the eligibility criteria prior to interview commencement (data collection, page 7)
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	No (data collection, page 7)
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	Interviews were audio-recorded using a password protected Dictaphone (data collection, page 7)
20. Field notes	Were field notes made during and/or after the interview or focus group?	Field notes were made after each interview (data analysis, page 8)
21. Duration	What was the duration of the interviews or focus group?	Interviews ranged from 20 to 37 minutes with a mean average of 28 minutes (data collection, page 7)
22. Data saturation	Was data saturation discussed?	Data saturation was met at n=14 (recruitment, page 6)
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No.
Domain 3: Analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	The primary researcher (MM) coded all transcripts. Supervisor (SG) independently coded two transcripts (data analysis, page 8)
25. Description of the coding tree	Did authors provide a description of the coding tree?	No.
26. Derivation of themes	Were themes identified in advance or derived from the data?	Themes were derived inductively from the data (data analysis, page 8)
27. Software	What software, if applicable, was used to manage the data?	Microsoft Excel and NVivo were used to organised codes. Audio-recordings were listened to via Olympus dictation software (data analysis, page 8)
28. Participant checking	Did participants provide feedback on the findings?	All participants were sent a summary of the main themes and ideas derived from their interviews. 11 participants replied saying this was a correct interpretation of their viewpoints (data analysis, page 8)
Reporting		

29. Quotations presented	Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? e.g. participant number	Yes, comments were supported using direct participant quotes. Participants were assigned a gender-specific pseudonym which was used in quote presentation (results, page 9)
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes (results, figure 2, table 2 and table 3, pages 9-29)
31. Clarity of major themes	Were major themes clearly presented in the findings?	Yes (results and figure 2, pages 9-29)
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes, all themes are presented (results and figure 2, pages 9-29)

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University students' understanding and opinions of eating disorders: A qualitative study

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For peer review only

University students’ understanding and opinions of eating disorders: A qualitative study

Short title: University students and eating disorders

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Abstract

Background: Eating disorders (EDs) affect 1.25 million people in the UK. Evidence suggests the public display stigma and poor mental health literacy (MHL) towards EDs. There is a high prevalence of EDs in university populations, so it is important to determine the MHL of this at-risk group. Qualitative research exploring the MHL of this population is incomplete.

Objective: Explore university students' beliefs and opinions of EDs, their knowledge of symptoms, treatment and help sources and how these are influenced by biological sex.

Design: A qualitative study, using semi-structured interviews analysed using inductive thematic analysis.

Setting: The University of Birmingham.

Participants: Seven female and seven male University of Birmingham students.

Results: Analysis revealed six themes, each with subthemes: ED characteristics, causes, body image, seeking help, stigma and awareness. Students displayed poor awareness towards ED signs and symptoms, causes and help sources. Students were not stigmatising towards EDs, but many perceived them as a female problem and believed society to be stigmatising. Many referenced informal sources of information such as social media and expressed a desire for ED teaching. Sex did not have a significant influence on knowledge or opinions of EDs in this study, however there were some differences, for example some males were more likely to see EDs as a weakness and to perceive themselves as having low levels of knowledge.

Conclusions: University students show broad awareness of EDs however knowledge of certain aspects of ED-MHL including help sources and symptom recognition was lacking. Although students were not stigmatising of EDs themselves, many perceived high levels of public stigma. This, alongside poor knowledge, may delay help-seeking. Campaigns educating students and the public about EDs would aid earlier diagnosis, improving long-term outcomes. Further research into awareness and knowledge in other populations would be beneficial.

Keywords: Eating disorder, qualitative research, mental health literacy, social stigma, students, attitudes, health knowledge, opinions.

Article summary: Strengths and limitations of this study

- First qualitative exploration of knowledge and understanding of eating disorders in UK university students.
- Qualitative methodology allowed broad exploration and insight about perceptions of eating disorders in this at-risk population.
- Member validation and analyst triangulation with an experienced qualitative researcher strengthen the methodology.
- Some participants may have been hesitant to disclose their true views due to social desirability bias.
- Study was advertised as research about eating disorders, so participants could have volunteered because they have an interest and therefore more knowledge about eating disorders.

Introduction

Eating disorders (EDs) are a class of severe mental illnesses(1) that affect 1.25 million people in the UK(2). They are characterised by abnormal eating behaviours and attitudes that have a significant impact on the physical health of those suffering(3), resulting in complications including osteoporosis and cardiac arrhythmias(4). These go hand in hand with psychiatric comorbidities such as depression(5). For these reasons, one ED subtype, anorexia nervosa (AN), has the highest mortality rate of any psychiatric condition(6).

Notwithstanding the significant mortality and morbidity associated with EDs, statistics show it takes individuals an average of 91 weeks to realise they have an ED, on top of the 58 weeks they typically wait before presenting to their doctor(7). Recent data suggests a shorter duration of untreated eating disorder is associated with increased likelihood of remission(8). However, fewer than 20% of individuals who screen positive for an ED go on to receive treatment(9,10), highlighting a significant treatment gap, and leaving individuals vulnerable to suffering debilitating long-term outcomes.

This delay in health seeking is postulated to be due, in part, to poor mental health literacy (MHL) and the fear of stigma attached to EDs(11). MHL refers to an individual's 'knowledge and beliefs about mental disorders that aid the recognition, management or prevention of these disorders'(12). Studies show members of the public attribute EDs to personal shortcomings and perceive ED sufferers as vain and self-obsessed(13,14). This can result in high levels of self-stigma, whereby an ED sufferer turns public stigma towards themselves(15), lowering self-worth and self-efficacy, and further delaying help-seeking(16).

The ability to recognise ED behaviours has been shown to be a significant factor in improving early-intervention and help-seeking(17). Furthermore, an ED sufferer’s social network has been shown to be fundamental in improving ED identification and encouraging treatment-seeking(18).

However, research indicates the public display poor MHL towards various mental illnesses(19), including EDs(20,21), suggesting the ability of the public to recognise an ED in themselves or in others is sub-optimal. In addition, eating disorder mental health literacy (ED-MHL) appears less systematically investigated than MHL relating to other mental illnesses, and therefore research in this area lacks the ability to inform relevant health promotion and early intervention programmes that seek to reduce the burden of these conditions(22,23).

In the UK, the highest incidence of EDs occurs in girls between 15 and 19 years of age(24), with symptom duration often lasting 5-8 years(2). Unsurprisingly, there is a high prevalence of EDs in university populations(25), where normalisation of ED behaviours such as restrictive dietary intake and overexercising alongside a loss of external accountability can exacerbate symptoms and lead to the development of new, unhealthy food behaviours(26). Furthermore, in a survey of UK university students by the ED charity Beat, 32% of students with an ED were diagnosed at university, however 69% reported difficulties accessing treatment(27).

Literature suggests that men constitute at least 25% of UK ED cases(28). However, research indicates the public expectation that EDs are primarily a female issue limits young men's ability to recognise their symptoms and delays them from seeking appropriate help(29,30). Sex bias is also indicated, with studies indicating that men hold more negative attitudes towards EDs(31,32) and have generally poorer MHL than females(20).

The majority of previous studies into ED-MHL have been quantitative, and have taken place outside of the UK, where different cultural norms, health systems and mental health education may mean results are not necessarily transferrable to the UK(33). Although useful for determining the general scope of ED knowledge and associated stigma, the pre-prepared questions in such studies do not allow for volunteering of further opinions not expressed in the questionnaires. Additionally, it does not allow in-depth exploration of individual beliefs and attitudes.

Therefore, there is a need for extensive qualitative research to be carried out in this area. Yet, existing UK qualitative literature into ED-MHL is lacking, only seeking responses from females(34), meaning difference in responses between males and females cannot be inferred. Some qualitative literature exists from other countries, but this literature is also incomplete, focussing only on ED causes(21), or solely on AN(35). Furthermore, none of these studies concentrated on at-risk populations such as university students.

Research focussed on university students, to determine if differences in understanding and opinions of EDs exist between these at-risk young males and females can give an insight into the ED-MHL of this population, identifying areas where greater education is needed to improve help-seeking and reduce stigma. This paper reports on a qualitative interview study which aimed to determine university students' ED-MHL, exploring beliefs and opinions of EDs and their knowledge of ED symptoms, treatment and sources of help. It also sought to determine the impact of sex on ED perceptions and knowledge.

Materials and methods

Participants

Participants were recruited from a convenience sample of English speaking University of Birmingham students(36), chosen purposively to ensure equal numbers of male and female participants were recruited(37). To investigate lay perceptions of EDs, students with a previous formal diagnosis of an ED were excluded, alongside students studying a healthcare degree or psychology, as they were assumed to have greater ED knowledge than other university students(38). To focus on UK perceptions, international students and international exchange students were also excluded.

Recruitment

Participants were recruited via advertisements placed around the university campus and posted on a University of Birmingham Facebook group(39).

Participants who responded were emailed a participant information sheet and eligibility questionnaire to enable purposive sampling based on sex, and ensure any non-eligible individuals were excluded, for example those who had previously been diagnosed with an ED(37).

Participant recruitment continued until data saturation was reached (Fig 1).

Fig 1: Participant recruitment process

Fig 1 legend: Individuals who responded contacted the researcher to enquire about the study. Non responders either did not return the eligibility questionnaire or did not confirm interest in the study. Five participants were not required as data saturation was reached.

Data collection

Data was collected using face to face, semi-structured, audio-recorded interviews(40). These took place in a private room in the University of Birmingham library during January and February 2020. No repeat interviews were undertaken. Written, informed consent was obtained from each participant prior to their interview.

All interviews were carried out by MM, a female, white British medical student intercalating in psychological medicine. Interview duration ranged between 20 and 37 minutes, with a mean of 28 minutes. The researcher did not know any participant prior to study initiation, and all were aware of the interviewer's demographics as outlined in the participant information sheet, prior to their interview. Upon interview completion, each participant received a £15 Amazon voucher to thank them for their time.

An interview guide (supplementary file 1) of open-ended questions informed by relevant literature(34,41,42) was used to explore key areas of MHL(43), including knowledge of ED symptoms, causes, characteristics, treatments and recovery, and personal help seeking behaviours (see supplementary file 1 for specific questions relating to these areas). These topics were chosen to reflect a broad overview of ED-MHL, to ensure participants were able to share their full knowledge and perceptions they have of EDs, ensuring the research question was answered. The interview guide ensured consistency across interviews and was piloted on participants known to the researcher who met the eligibility criteria to ensure questions were accessible to participants. Pilot data was not included in the study.

Data analysis

Following each interview, field notes were taken to contextualise interviews and reflect on the researcher's impact on the interviews(44). Interviews were transcribed verbatim by MM and listened to twice to ensure transcript accuracy. To establish participant anonymity and confidentiality, each was allocated a numerical ID used for data collection and analysis.

Data was thematically analysed using Braun and Clarke's six step process(45), as it allows rich interpretation of data. An inductive approach was taken, therefore analysis was data driven, rather than theory driven(46). Transcripts were read twice to ensure familiarisation. Open coding was then performed manually, and codes inputted into the software NVivo for clarity and organisation(47). As analysis progressed, codes were refined and sorted into themes and subthemes using an Excel spreadsheet, NVivo and thematic maps(48). This allowed codes to be compared between participants and between sexes.

To enhance the quality of the analytic process, investigator triangulation occurred(49). Two transcripts were coded independently by SG, an experienced qualitative researcher. MM and SG then met to discuss analysis and agree on themes, before meeting again to further refine and define themes. Furthermore, to ensure credibility of results, member validation occurred. Participants were sent their interview's main themes asked to confirm these reflected the intent of their responses. 11 participants responded confirming this was an accurate representation of their views(50). Data is reported in accordance with the consolidated criteria for reporting qualitative research (COREQ) checklist(51).

Patient and public involvement

Patients and members of the public were not involved in study design or development. Participants were involved in study analysis through member validation.

Results

Seven male and seven female participants took part in the study, their characteristics are described in table 1. 86% were White British ethnicity, and the ages of participants ranged from 18 to 26 years old. Participants studied a wide range of university courses, with the majority reading either the arts and law or social sciences.

Table 1: Participant characteristics

			Participant														N
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Characteristics	Age		19	18	19	22	20	19	21	21	22	21	18	21	19	26	18-26
	Sex	Male	✓				✓	✓					✓	✓	✓	✓	7
		Female		✓	✓	✓			✓	✓	✓	✓					7
	Ethnicity	White	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓		12
		Asian														✓	1
		African Caribbean										✓					1
	Course	Life and environmental sciences					✓		✓								2
		Arts and law	✓		✓						✓		✓	✓			5
		Biomedical sciences		✓													1
		Engineering and physical sciences				✓										✓	2
		Social sciences						✓		✓		✓					3
		Liberal arts and natural sciences													✓		1

Table 1 legend: Participant age ranged from 18-26. Equal numbers of male and female participants took part in the study and 86% of participants were of white British ethnicity. Participants studied a range of university courses, including arts and law and social sciences.

Six themes, each with subthemes, were interpreted from the data: ED characteristics, causes, body image, seeking help, stigma and awareness. Themes represent central attitudes and ideas discussed throughout interviews. Some reflect areas of the interview guide, however others, such as stigma, were mentioned by participants without directly being led by the interview guide. Fig 2 summarises the links between themes and the impact of sex on results.

Fig 2: Links between themes and impact of biological sex

Fig 2 legend: Each box contains one theme and associated subthemes. Links between themes are represented by a black line.

Themes are displayed with supporting quotations, presented with biological sex specific pseudonyms to maintain confidentiality. Superfluous text within quotations has been removed and is represented by an ellipsis […].

ED characteristics

Types of ED

All participants mentioned AN, and most were able to attempt a definition. Many participants also cited over-eating as an ED, however only three specifically defined binge eating disorder. Though 12 participants were able to name bulimia nervosa (BN), many were hesitant to define and describe it:

> 'I think most people have some kind of idea of what anorexia is, bulimia, I think it's more complicated' (David, 21)

Defining EDs

Many participants believed EDs to be a psychological issue and defined them as a mental illness. Furthermore, EDs were frequently recognised as a spectrum, a scale between disordered eating and a severe ED:

> ‘I think they’re almost like a spectrum, I think some people have a really bad eating disorder and it affects them in a really bad way but I think a lot of people can have unhealthy relationships with food that but they stay at a sort of stable weight but it’s more of the mental thoughts they have about it’ (Chelsea, 22)

Appearance

12 participants perceived EDs as a predominantly female problem, with few mentioning EDs in men. They were also frequently associated with younger people, believed to affect those of school and university age:

> ‘Younger women are the main category, so teenagers to like early mid-twenties I’d say, so that captures students’ (Rebecca, 21)

> ‘If I see a guy and he’s skinny […] I don’t think there’s any chance of it being an eating disorder, he’s just skinny’ (David, 21)

The perception that individuals with EDs are ‘skinny’ or ‘skeletal’ was held by 13 participants, and many described the impact of EDs as severe, believing sufferers to appear ‘ill-looking’ and ‘gaunt’:

> ‘So skinny that you can see their hip bones protruding, knee bones look massive in comparison to the rest of their leg because they’re so big and like clothes hanging off them’ (Katie, 19)

Traits

Vulnerable

Whilst the majority of participants recognised EDs as challenging and impactful, some male participants were more likely to associate EDs with vulnerability, perceiving sufferers as ‘fragile’:

> ‘I’d see them as more fragile I think, I’d see them more […] like a vase’ (William, 19)

Obsessive

There was the view that individuals with EDs are obsessive and seeking perfection, with two students commenting on a ‘type A’ personality putting someone at increased risk of an ED (52):

> ‘If you’re quite neurotic so you’re a bit strung, highly strung up maybe they’re a perfectionist or someone really has to be yeah really controlling about things in life’ (Callum, 26)

Control was mentioned by five participants, four of whom were female. EDs were seen as a coping mechanism, by which individuals can take control of aspects of their lives:

> ‘They get some sort of, I wouldn’t say enjoyment but satisfaction with having the control of food especially if they don’t have the control of anything else’ (Katie, 19)

Image conscious

Seven students believed ED sufferers hold a low self-worth, perceiving them to care a lot about their own image and what others thought of them:

> ‘Lack of confidence as a trait would also make you a lot more sort of conscious of how you’re seen’ (Shaun, 19)

Signs and symptoms

Perceived signs and symptoms freely volunteered by participants are presented in table 2. Students were generally unaware of specific ED symptoms and which symptoms were associated with specific EDs. Some symptoms were recognised more than others, specifically under-eating and over-eating. Vomiting and binge eating and purging were also frequently mentioned, and all participants that recognised these symptoms associated them with BN. Despite seven participants describing EDs as visible illnesses with numerous physical signs, many perceived difficulties in recognising signs and symptoms, describing EDs as conditions that are not easy to spot:

'It's not really as apparent, we don't see people naked or in their underwear every day, you just assume someone's fine' (Danielle, 21)

Table 2: Perceived signs and symptoms of EDs

Signs and symptoms	Frequency stated	Supporting quotation
Binge eating and purging	8	'Bulimia is sort of binge eating then like purging it by making yourself throw up' (Shaun, 19)
Vomiting without binge eating	12	'The one where it makes you sick' (Chelsea, 22)
Calorie counting	4	'A person controls the amount of food they eat either by how many calories they have and they set like certain routines of how many calories they can have' (Katie, 19)
Odd food behaviours	3	'Weird food habits, cutting food into small pieces and like not chewing properly or taking too long to chew, hiding food' (Katie, 19)
Commenting about food	3	'They might like complain about something or like complain about the fact they haven't, oh I've ate such rubbish today, I've like had a bag of crisps today or oh yeah, it's like very trivial things that no one else cares about' (David, 21)
Fussy eating	2	'Often people are picky, picky eaters, but that might not just be them being a picky eater, it might sort of be a deep set in of not enjoying certain types of food' (Andrew, 19)
Under-eating	12	'You choose not to eat, you chose to eat very little' (Joshua, 20)
Not eating in-front of people	2	'Some people don't enjoy, or don't like eating in front of other people' (Andrew, 19)
Over-eating	8	'Eating disorders can also be at the other end of the scale when somebody would over-eat as well' (Abigail, 18)
Missing meals	3	'Avoiding things like mealtimes' (Abigail, 18)
Exercise	2	'If they over-eat the amount of calories that they've like set for themselves then they have to like exercise to work it off' (Katie, 19)
Weight loss	6	'Extreme weight gain or weight loss, so big changes in someone's life to do with weight or food' (Grace, 22)

Table 2 legend: Table 2 shows perceived signs and symptoms of EDs alongside frequency stated by participants and a supporting quotation.

Causes of EDs

Many male students were unaware of potential causes on initial questioning. Perceived causes, after prompting in many cases, are presented in table 3. Several students referenced internal factors such as a psychological comorbidity or low self-worth as major ED causes. Of the seven individuals who believed low self-worth could contribute, five were male. Nevertheless, many students attributed social causes to be the most influential:

> ‘Social factors would probably play a larger role’ (Katie, 19)

Table 3: Perceived causes of EDs

Cause of EDs	Subcategory	Frequency stated	Supporting quotation
Internal factors	Body dysmorphia	5	‘Them not seeing their body in the way that other people would see it so there’s like that image that I think is used in loads of advertisements of a really skinny girl and she’s looking in a mirror and it’s like a much bigger reflection’ (Katie, 19)
	Genetic	5	‘I suppose if genetically you’re inclined to develop an eating disorder then probably that would be just as influential’ (Alicia, 21)
	Low self-worth	7	‘The root cause is probably from my understanding is like this idea of self-loathing, self-hatred this idea of not liking yourself and wanting to change yourself’ (Joe, 19)
	Family history	2	‘I could imagine if I was born into a family that had a history of say mental illness and eating disorders, it might be, not necessarily that you’ve been passed on genetically but it might be easier for that family to develop problems similar to those they had in the past, which I guess would be easier to pass on to you, as a person’ (Thomas, 18)
	Psychological comorbidity	10	‘I think it seems entirely plausible like if you have a mental illness such as depression perhaps, through that you could develop an eating disorder as well’ (Joshua, 20)
	Vicarious learning	2	‘There’s like the classic example of like passing from the, the mother to the daughter when she talks about like diet culture and everything, it can often become like instilled from a young age but subconsciously’ (Abigail, 18)

External factors	Bullying	6	‘Bullying, especially like younger kids who haven’t really had a chance to feel confident in themselves, if they get bullied, especially in school, like even if you’re like slightly overweight, not in a bad way, kids can be mean and say things and then that can lead to, especially in adolescence when you’re, I think there’s a lot of hormones and changes and you’re like vulnerable, I think if people are bullied that can lead to eating disorders when people are younger’ (Rebecca, 21)
	Life pressure	2	‘General stress, like pressure from external sources, so maybe work or something, or a big change in someone’s life, I think that can trigger any mental health issue’ (Grace, 22)
	Media pressure	12	‘I mean there’s a lot of very unhealthy representations in the media of what the perfect body looks like and I think that can be a sort of a fuel point for those issues’ (Joe, 19)
	Parental pressure	2	‘Sometimes it’s pressure from parents not in like, so I know some people that like their parents wanted them to be really academic but also I know some people’s parents have literally told them that they’re like fat and need to lose weight and stuff’ (Katie, 19)
	Traumatic life event	5	‘Sexual assault, I think some people might go to extremes to make themselves look undesirable so that they’re not victims again’ (Danielle, 21)
	University	5	‘People are at uni, I can imagine that’s such a big shift, you move away from like your family and you’re living by yourself, I can imagine that would probably be pretty easy, well pretty likely for something like that to develop’ (Thomas, 18)

Table 3 legend: Table 3 shows perceived causes of EDs alongside frequency stated and a supporting quotation.

Body image

Participants perceived poor body image as both an ED cause and a consequence of repeated pressure from the media. Many commented that poor body image was common, and referenced their own personal experience of a poor relationship with their body:

> ‘I think it affects lots of people, like sort of body dysmorphia in general, I think like in some kind of mild forms’ (Adam, 21)

'The perfect body'

'The perfect body' was something that had been repeatedly presented to many participants from a young age, with individuals with this body type deemed more attractive to society and the opposite sex:

> 'If you don't look like that, or you're not like aiming to look like that […] then you're unhealthy or you're not good enough or you're not attractive […] because you have to fit into like one of the groups, one of the standards presented' (Grace, 22)

All students cited media pressure as a cause of poor body image, with many reflecting on increased pressure due to the rise in social media, resulting in a constant comparison of oneself against others:

> 'Because of social media, you're always comparing yourself to other people, I think people feel more in competition with other people all the time […] I don't think it's healthy on body image' (Rebecca, 21)

Many students believed females to be under greater pressure, citing increased female body representation in the media and sexist viewpoints towards female bodies as mechanisms for this. Ten participants referred to the 'female ideal' of being slim:

> ‘What you’d see in something like London fashion week, tall skinny models that would have potentially a thigh gap, a flat stomach, no stretch marks, not much cellulite’ (Katie, 19)

Contrastingly, the ‘male ideal’ was described as heavily muscular:

> ‘A six pack, like well-toned, just a good size of muscles like all over’ (Andrew, 19)

Male body image

Despite acknowledging that males also experience pressure to look a certain way, students generally inferred that males care less about image and are not bothered about how other people perceived them. This was supported by male participants being more likely to comment that body image worries did not personally affect them:

> ‘Myself I'm not too bothered, but men in general if I had to be very stereotypical, I would say men don’t care as much about their image’ (Joshua, 20)

Various students commented on the societal stigma they believe exists around men’s bodies, with male body image viewed as less inclusive and spoken about than female body image. Due to this, some participants commented that many males do not talk about their bodies:

> 'The stereotype of not showing weakness may mean that they're less willing to open up' (Shaun, 19)

Seeking help

With prompting, 12 participants were able to suggest some sources of professional help available to support those with EDs. Seven participants recognised the importance of seeking social support. Many students commented on potential treatment barriers, including perceived negatives of medical treatment and worries about self-image.

Professional

Twelve participants recognised therapy as a potential treatment. Further sources of formal treatment included treatment in specialist hospitals and nasogastric feeding. Many participants, especially females, commented on issues with seeking medical treatment, including perceived lack of treatment availability and the belief that doctors would not take EDs seriously:

> 'With the NHS they have so much on their plate and there's underfunding and stuff so I just personally wouldn't want to go there for them. And as well GPs can be a bit snappy and try and like rush you and stuff' (Chelsea, 22)

Ten participants said they would be willing to seek professional help, the majority mentioned consulting their GP or seeking a therapist. Male participants were more likely to seek only professional support or seek social support after first pursuing professional support. Furthermore, some mentioned first researching online about what help was available for EDs:

> 'Probably look on NHS website first I'm sure they'd probably say go to a doctor and then I'd probably get a referral from the doctor' (Callum, 26)

Social

The majority perceived social support as vital in both recovery and maintaining recovery. Five participants mentioned greater willingness to seek social rather than professional support, highlighting the ability of the social network to encourage help-seeking:

> 'I'd probably ask for someone's advice on whether I should go to the doctor' (Grace, 22)

Despite perceived benefits of seeking social support, many commented on potential barriers that would prevent them from seeking social support, including not wanting to bother others with their problems and a fear of being judged. All male participants worried about being perceived differently by peers:

> 'If I suspected one of my friends of having an eating disorder I'd see them as fragile and delicate, I wouldn't want the people close to me to see me as fragile and delicate cos I wouldn't want people's opinions to change about me' (William, 19)

The desire to help those with an ED was emphasised by 13 participants, however six participants recognised that helping someone with an ED was often difficult. Participants were generally sympathetic, suggesting a need to be supportive and encourage those suffering to seek professional support:

> 'I'd encourage them, and if they were like I want to get medical help I'd like come with them' (Thomas, 18)

Notwithstanding the support offered, many participants predicated a subconscious change in behaviour that would come with knowing someone had an ED. Nine participants mentioned a need to act carefully around those with EDs, particularly in situations involving food. Five participants also recognised the need to maintain a sense of normality:

> 'I'd want to be a lot more careful with how I acted around them but then again whilst I'd be a lot more careful I'd also very much try to act that nothing has changed, so around them I'd try and act exactly the same' (William, 19)

Internal barriers

The extent that personal beliefs and coping mechanisms limited help-seeking was also discussed. Seven participants highlighted the struggles that come with seeking help, perceiving EDs as difficult to discuss, and help-seeking as embarrassing and scary:

> 'I can imagine that would be a really hard conversation, to say like mate I think you might have an eating disorder, I wouldn't want to hear that, I don't think anyone would want to hear that' (Thomas, 18)

The internalisation of one's problems was mentioned by three participants. This came hand in hand with a perception that EDs are not a serious issue, and therefore something that could be easily dealt with by oneself. Furthermore, many participants held the belief that individuals with EDs may not want to recover, or may lack the intuition to realise they have a problem:

> 'I imagine some people just don't even know that they, it's a problem for themselves and they could be putting themselves at risk' (Grace, 22)

Recovery

Eleven participants believed it was possible to recover from an ED. Despite this, participants made frequent reference to the idea that the ED would remain with you, and that it would be easy to relapse. Ten participants commented on the ease of falling back into previous behaviours or thoughts:

> 'I think it would be difficult for them to never have them same thoughts in their head again. So, I think the thoughts will always be there it just depends, they can probably learn to live with it rather than them let it take over their life' (Chelsea, 22)

Stigma

The majority of participants recognised EDs, and mental health conditions in general, as highly publicly stigmatised.

Label

Some participants commented on the impact of EDs on image. Five students perceived EDs as conditions that are shamed within society, commenting that society has a tendency to label people with mental health issues:

> 'I wouldn't want it to be perceived as a part of my identity, I wouldn't want to be known as the boy with an eating disorder rather than anything else about me, I wouldn't want that to be what people sort of defined me as' (Shaun, 19)

EDs being seen as a 'weakness' was mainly specified by male participants, with three participants stating this as a reason they would not tell anyone they had an ED:

> 'I think I'd find it hard to tell my friends about it as well, like show weakness rather than just coming across as someone who's laid back and calm' (Shaun, 19)

Taboo

A number of students saw EDs as conditions that are rarely discussed by society. Many held the perception that mental illnesses were 'taboo'. Additionally, six students commented on EDs being poorly understood within the community, seeing society as ignorant towards the seriousness of the conditions:

> 'I feel like for a long time it wasn't really recognised and therefore people didn't, if you had an eating disorder it was sort of why are you be being difficult rather than being like oh let's work, let's find a way to work around this' (Andrew, 19)

In addition, a number of students saw EDs as conditions that were 'difficult to relate to', citing this as a reason why many find it hard to understand EDs:

> 'If someone's feeling anxious they can talk to their friends about it, there'd be some level of empathy and them understanding that, I think it would be much harder to talk to a friend and expect them to, well have them understand an eating disorder, because it's not a shared thing' (David, 21)

Awareness

Throughout the interviews there was a general hesitancy and lack of awareness when discussing certain aspects of EDs.

Lack of knowledge

Ten participants, the majority of whom were male, perceived themselves to have poor knowledge about certain aspects of EDs. Many were hesitant to answer, and lacked confidence in their answers:

> ‘I don’t know a huge amount, so I definitely don’t have great knowledge on it’ (Callum, 26)

Furthermore, many participants stated their knowledge as ‘assumptions’ or ‘clichés’, with male participants particularly worried that their answers were incorrect or would be interpreted improperly:

> ‘I don’t want my opinions to come across like I know what I’m talking about almost, if you know what I mean’ (Joshua, 20)

Sources

Nine participants mentioned knowing an ED sufferer, evidencing the frequently held perception that EDs are common. Many cited experiences of these individuals as sources of their knowledge, particularly around treatment and symptoms:

> ‘I think now they’re quite common, I feel like everyone knows someone who’s struggled with an eating disorder’ (Rebecca, 21)

Six participants mentioned being formally taught about EDs in school, however many reflected that these lessons were ‘basic’ and were unable to recollect what specifics they had been taught:

> ‘We had like the basic kind of PSHE lessons about it but nothing that could have like helped anyone, or not enough I don’t think’ (Chelsea, 22)

The majority of participants cited informal sources such as social media and films as their sources of ED knowledge:

> ‘A lot of what I think about eating disorders is from movies and TV shows, rather than fact’ (Grace, 22)

However, some participants acknowledged that they were sceptical about the accuracy of this information. Furthermore, a number of students made comment about how the representation of EDs in the media, and their perceived commonness within the younger generation had made them sensitised to the signs and consequences of EDs:

> ‘With the lens of social media […] when I first found out about eating disorders, at 14 or 15, made it seem almost, I don’t want to say too ok but it almost normalised it to a point where I actually didn’t realise for a little bit how serious an eating disorder was’ (Thomas, 18)

Improving awareness

Seven participants commented on the need to improve ED teaching. For many, the need to educate individuals about the signs and symptoms and promote help-seeking was of particular importance:

> ‘It flagged them up as being as issue but never really went into depth with what to do about them or how to act with someone who has those and so I found that I had to learn it for myself rather than learning from like lessons and things’ (Shaun, 19)

Despite the perceived need for better teaching, a number of students commented on positive steps in society that are improving ED awareness. Many commented on improving body representation in the media and five students commented on sources of positive ED representation, believing this to be beneficial to those suffering.

> 'I got a lot of knowledge from social media and stuff like that, a lot of it really positive stuff, you know hashtags on twitter or stuff on Tumblr, people sharing their experiences and stories and it's all been from a very supportive, positive light' (Thomas, 18)

Discussion

Main findings

This study, to the best of the author's knowledge, is the first UK qualitative study exploring ED-MHL in university students. Generally, the study highlighted the university students interviewed had a broad awareness of EDs, for example a good general awareness of symptoms and signs and treatment options, however there were areas where knowledge was lacking, even in this highly educated group.

Whilst many students were able to state AN and BN as EDs, many were hesitant to define and describe BN, and only a few were able to suggest further ED types. Furthermore, though many students were able to name some signs and symptoms when prompted, there was a great deal of uncertainty, and many struggled to link particular symptoms to specific EDs. The findings of this study are in keeping with a previous quantitative study of members of the public, in which participants showed difficulty discriminating between ED diagnoses(53). There was no apparent difference in ED identification between sexes, in contrast to a previous vignette study of Canadian post-secondary students, in which males had greater difficulty identifying ED diagnoses(54). Awareness of ED symptoms is important, as poor symptom recognition is associated with reduced likelihood of help-seeking, and increased risk of long-term outcomes(55,56). Many students in this study perceived EDs as a female problem. This perception was also reported in a previous qualitative study of young people, who also believed AN to be a female issue(35). EDs are already considered underdiagnosed in men(57), therefore this belief, in this at risk population, can result in young men being less likely to recognise their symptoms as indicative of an ED, and in them being less likely to seek help(30).

The greatest perceived cause of EDs was media pressure. These results are similar to a previous qualitative study in members of the public, in which media-ideals were a major perceived cause of EDs(21). Furthermore, many participants made reference to the 'thin-ideal' presented to young women in the media. This perception is common, with previous research in UK students highlighting how a desire for a thin, often unattainable body type is associated with ED development(58).

Although participants in this study did not generally hold stigmatising attitudes towards EDs, several perceived EDs as highly stigmatised in the community. This perception is in line with previous studies, which have shown public attitudes towards EDs are highly conductive to stigma(14,59). Higher educational status is correlated with liberal views towards mental illness, which may explain the low levels of stigmatisation apparent in the participants of this study(60). Many students cited fear of public stigma as a reason for not seeking help, further enhancing the idea that fear of public stigma is a major cause of delayed help-seeking(11).

Previous studies focussed on ED stigma in university students have highlighted significant sex bias, with males exhibiting higher ED stigma than females(31,61). The results of this study are not in keeping with this literature, as differences in stigmatising viewpoints were not as apparent between male and female participants, though some differences were observed.

Encouragingly, the majority of participants said they would seek professional help for an ED; however, many were unsure of what help is available, and many made comments about perceived negatives of professional support, such as not being taken seriously. These worries are in keeping with previous research(62) and could act as an explanation as to why those with EDs take so long to seek treatment(8). Most participants expressed sympathy and a desire to help those with an ED, and many recognised the importance of social support, which has been shown to be highly influential in ED recovery(63).

Many participants perceived themselves as having poor or inaccurate knowledge. With this in mind, the majority of participants referenced informal sources such as social media as their main informants, similarly to recent quantitative research in Italian students(64). However, these sources of ED information are likely to be damaging and inaccurate(65,66). Students in a previous Australian study highlighted a desire for greater ED teaching in schools(54), a sentiment similarly expressed by participants of this study, many of whom perceived their ED teaching as inadequate.

Previous research in members of the public showed significantly poorer MHL in male participants(60). Contrary to this, differences in the ED-MHL between the male and female participants of this study was not significantly apparent. However, there were some disparities. Male participants were more likely to perceive themselves to have low levels of knowledge and appeared more reluctant to seek social support, making more reference to perceived social stigma, such as being perceived differently by their peers.

Strengths and limitations

To the best of the authors' knowledge, this study is the first in-depth, qualitative exploration of knowledge and understanding of EDs in UK university students. This is a major strength of the research as the interviews enabled broad exploration of knowledge and enable further insight into individual perceptions of EDs and beliefs about stigma and treatment barriers in a highly specific, at-risk population. The use of member validation and analyst triangulation with an experienced qualitative researcher further strengthens the study. Data saturation was reached with 14 participants which reflects recommended sample sizes in a study of this type(67).

However, there are a number of limitations. The study was advertised as looking at EDs, therefore participants could have volunteered because they had a greater interest or perceived themselves to have greater ED knowledge. Furthermore, some participants may have been reluctant to disclose their true views about EDs due to social desirability bias(68), and may have held more stigmatising viewpoints than was apparent from interviews. Participants' lack of awareness in certain areas may reflect this bias and therefore they may have been reluctant to discuss answers they knew may have been rooted in stereotypical assumptions. Methods to minimise the impact of social desirability bias, such as self-administered questionnaires may be beneficial for future research(69).

Research and policy recommendations

This study, alongside others, highlights there are poor levels of ED knowledge in this population in certain areas, including symptom recognition and awareness of treatment options. Further research in this at-risk population using vignette studies may be beneficial to draw further inferences about individual perceptions about EDs.

Furthermore, this study also emphasised a desire from participants for greater ED teaching. Therefore, ED educational campaigns within schools or universities would be crucial to improving awareness of symptoms and treatments and may encourage earlier help-seeking and improve treatment uptake in this at-risk group. Additionally, university, school and college welfare services need to be suitably prepared to support individuals with EDs. Improving ED education in university and school staff, through courses such as Beat's 'bridging the gap', can increase early detection of EDs and ensure individuals with EDs are given the support they need(70).

Despite anti-stigma campaigns such as Beat's 'eating disorder awareness week'(71), participants still perceived EDs as stigmatised within the community. There is a need for research into the efficacy of ED anti-stigma campaigns to determine which methods work, allowing for more successful future campaigns. Findings from a small-scale trial suggest the delivery of information emphasising the biological basis of EDs can help reduce stigmatising attitudes towards EDs(72), hence further research into provision of this information would be beneficial. There is also a need for research involving participants of different educational levels and ages. This would be more indicative of public knowledge and understanding and would help inform educational and anti-stigma campaigns targeted at a broader audience. The perception of EDs as a ‘female issue’ is still a major problem, and therefore anti-stigma campaigns targeted at males may be useful to address the sex-specific stigma associated with EDs and improve symptom recognition and help-seeking in men.

Conclusions

This study demonstrates that although this group of UK university students demonstrated a broad general awareness of EDs, there remain areas where knowledge is lacking. There is a need for health campaigns targeted at at-risk, younger individuals to better educate them about EDs, including information about symptoms and treatment options to better aid recognition and improve help-seeking, with the hope of lowering the significant treatment gap apparent in these conditions. Further research is necessary to better determine the ED-MHL of the general public and to develop effective methods of tackling the stigma surrounding EDs and other mental health conditions.

Declarations

Ethics approval and consent to participate: Ethical approval was granted by the BMedSc Population Sciences and Humanities Internal Ethics Review Committee at the University of Birmingham. All methods were performed in accordance with the appropriate guidelines and regulations. Written informed consent was obtained from all participants.

Consent for publication: All participants provided written, informed consent. All data is de-identified within the report.

Availability of data and materials: The datasets generated and/or analysed during the current study are not publicly available due to the qualitative nature of the research. However, they are available from the corresponding author on reasonable request.

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References

1. Klump KL, Bulik CM, Kaye WH, Treasure J, Tyson E. Academy for eating disorders position paper: Eating disorders are serious mental illnesses. Int J Eat Disord. 2009;42(2):97–103.

2. Statistics for Journalists [Internet]. Beat. [cited 2019 Oct 13]. Available from: https://www.beateatingdisorders.org.uk/media-centre/eating-disorder-statistics

3. American Psychiatric Association, editor. Diagnostic and statistical manual of mental disorders: DSM-5. 5. ed. Washington, DC: American Psychiatric Publishing; 2013. 947 p.

4. Meczekalski B, Podfigurna-Stopa A, Katulski K. Long-term consequences of anorexia nervosa. Maturitas. 2013 Jul 1;75(3):215–20.

5. Kask J. Mortality in Women With Anorexia Nervosa: The Role of Comorbid Psychiatric Disorders. Vol. 78. 2016. 910–920 p.

6. Arcelus J. Mortality Rates in Patients With Anorexia Nervosa and Other Eating Disorders: A Meta-analysis of 36 Studies. Arch Gen Psychiatry. 2011 Jul 1;68(7):724.

7. BEAT. delaying-for-years-denied-for-months.pdf [Internet]. BEAT; [cited 2019 Oct 13]. Available from: https://www.beateatingdisorders.org.uk/uploads/documents/2017/11/delaying-for-years-denied-for-months.pdf

8. Austin A, Flynn M, Richards K, Hodsoll J, Duarte TA, Robinson P, et al. Duration of untreated eating disorder and relationship to outcomes: A systematic review of the literature. Eur Eat Disord Rev [Internet]. [cited 2021 Feb 8];n/a(n/a). Available from: https://onlinelibrary.wiley.com/doi/abs/10.1002/erv.2745

9. Fitzsimmons-Craft EE, Balantekin KN, Eichen DM, Graham AK, Monterubio GE, Sadeh-Sharvit S, et al. Screening and offering online programs for eating disorders: Reach, pathology, and differences across eating disorder status groups at 28 U.S. universities. Int J Eat Disord. 2019;52(10):1125–36.

10. Kazdin AE, Fitzsimmons-Craft EE, Wilfley DE. Addressing critical gaps in the treatment of eating disorders: KAZDIN et al. Int J Eat Disord. 2017 Mar;50(3):170–89.

11. Ali K, Farrer L, Fassnacht DB, Gulliver A, Bauer S, Griffiths KM. Perceived barriers and facilitators towards help-seeking for eating disorders: A systematic review. Int J Eat Disord. 2017;50(1):9–21.

12. Jorm AF, Korten AE, Jacomb PA, Christensen H, Rodgers B, Pollitt P. “Mental health literacy”: a survey of the public’s ability to recognise mental disorders and their beliefs about the effectiveness of treatment. Med J Aust. 1997 Feb 1;166(4):182–6.

13. Crisp AH, Gelder MG, Rix S, Meltzer HI, Rowlands OJ. Stigmatisation of people with mental illnesses. Br J Psychiatry. 2000 Jul;177(1):4–7.

14. Mond JM, Robertson-Smith G, Vetere A. Stigma and eating disorders: Is there evidence of negative attitudes towards anorexia nervosa among women in the community? J Ment Health. 2006 Jan;15(5):519–32.

15. Wingfield N, Kelly N, Serdar K, Shivy VA, Mazzeo SE. College students’ perceptions of individuals with anorexia and bulimia nervosa. Int J Eat Disord. 2011 May;44(4):369–75.

16. Dimitropoulos G, Freeman VE, Muskat S, Domingo A, McCallum L. “You don’t have anorexia, you just want to look like a celebrity”: perceived stigma in individuals with anorexia nervosa. J Ment Health. 2016 Jan 2;25(1):47–54.

17. Wright A, Jorm AF, Harris MG, McGorry PD. What’s in a name? Is accurate recognition and labelling of mental disorders by young people associated with better help-seeking and treatment preferences? Soc Psychiatry Psychiatr Epidemiol. 2007 Mar;42(3):244–50.

18. Vogel DL, Wade NG, Wester SR, Larson L, Hackler AH. Seeking help from a mental health professional: The influence of one’s social network. J Clin Psychol. 2007 Mar;63(3):233–45.

19. Jorm AF, Barney LJ, Christensen H, Highet NJ, Kelly CM, Kitchener BA. Research on Mental Health Literacy: What we know and what we Still Need to know. Aust N Z J Psychiatry. 2006 Jan;40(1):3–5.

20. Gibbons RJ, Thorsteinsson EB, Loi NM. Beliefs and attitudes towards mental illness: an examination of the sex differences in mental health literacy in a community sample. PeerJ. 2015 Jun 9;3:e1004.

21. Blodgett Salafia EH, Jones ME, Haugen EC, Schaefer MK. Perceptions of the causes of eating disorders: a comparison of individuals with and without eating disorders. J Eat Disord [Internet]. 2015 Sep 15 [cited 2019 Dec 7];3. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4570226/

22. Mond JM. Eating disorders “mental health literacy”: an introduction. J Ment Health. 2014 Apr;23(2):51–4.

23. Bullivant B, Rhydderch S, Griffiths S, Mitchison D, Mond JM. Eating disorders “mental health literacy”: a scoping review. J Ment Health. 2020 Feb 10;1–14.

24. Micali N, Hagberg KW, Petersen I, Treasure JL. The incidence of eating disorders in the UK in 2000–2009: findings from the General Practice Research Database. BMJ Open. 2013;3(5):e002646.

25. Royal College of Psychiatrists. Mental health of students in higher education [Internet]. London; 2011 Sep [cited 2020 Mar 4] p. 97. Report No.: CR166. Available from: https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/college-report-cr166.pdf?sfvrsn=d5fa2c24_2

26. Goldschen L, Lundblad W, Fertig AM, Auster LS, Schwarzbach HL, Chang JC. Navigating the university transition among women who self-report an eating disorder: A qualitative study. Int J Eat Disord. 2019;52(7):795–800.

27. Universities [Internet]. Beat. [cited 2020 Mar 25]. Available from: https://www.beateatingdisorders.org.uk/get-involved/universities

28. Sweeting H, Walker L, MacLean A, Patterson C, Räisänen U, Hunt K. Prevalence of eating disorders in males: a review of rates reported in academic research and UK mass media. Int J Mens Health [Internet]. 2015 [cited 2020 Mar 4];14(2). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4538851/

29. MacLean A, Sweeting H, Walker L, Patterson C, Räisänen U, Hunt K. “It’s not healthy and it’s decidedly not masculine”: a media analysis of UK newspaper representations of eating disorders in males. BMJ Open. 2015 May 1;5(5):e007468.

30. Dearden A, Mulgrew KE. Service Provision for Men with Eating Issues in Australia: An Analysis of Organisations’, Practitioners’, and Men’s Experiences. Aust Soc Work. 2013 Dec;66(4):590–606.

31. Schoen E, Brock R, Hannon J. Gender bias, other specified and unspecified feeding and eating disorders, and college students: a vignette study. Eat Disord. 2019 May 4;27(3):291–304.

32. McLean SA, Paxton SJ, Massey R, Hay PJ, Mond JM, Rodgers B. Stigmatizing attitudes and beliefs about bulimia nervosa: Gender, age, education and income variability in a community sample: Stigmatizing Attitudes and Beliefs About Bulimia. Int J Eat Disord. 2014 May;47(4):353–61.

33. World Health Organization, World Health Organization, editors. Mental health atlas 2017. Geneva, Switzerland: World Health Organization; 2018. 62 p.

34. A H, S B. To what Extent do the Public Need Educating about Eating Disorders? J Obes Eat Disord [Internet]. 2016 [cited 2019 Dec 7];02(02). Available from: http://obesity.imedpub.com/to-what-extent-do-the-public-need-educating-about-eating-disorders.php?aid=17628

35. Benveniste J, Lecouteur A, Hepworth J. Lay Theories of Anorexia Nervosa: A Discourse Analytic Study. J Health Psychol. 1999 Jan 1;4(1):59–69.

36. Convenience Sample. In: The SAGE Encyclopedia of Qualitative Research Methods [Internet]. 2455 Teller Road, Thousand Oaks California 91320 United States: SAGE Publications, Inc.; 2008 [cited 2020 Mar 12]. Available from:

http://methods.sagepub.com/reference/sage-encyc-qualitative-research-methods/n68.xml

37. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. Adm Policy Ment Health. 2015 Sep;42(5):533–44.

38. Rababah JA, Al-Hammouri MM, Drew BL, Aldalaykeh M. Health literacy: exploring disparities among college students. BMC Public Health [Internet]. 2019 Oct 29 [cited 2019 Dec 10];19. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6819582/

39. (2) Fab N Fresh - New [Internet]. [cited 2019 Oct 16]. Available from: https://www.facebook.com/groups/470776866402274/

40. Gill P, Stewart K, Treasure E, Chadwick B. Methods of data collection in qualitative research: interviews and focus groups. Br Dent J. 2008 Mar;204(6):291–5.

41. Cadge C, Connor C, Greenfield S. University students’ understanding and perceptions of schizophrenia in the UK: a qualitative study. BMJ Open. 2019 Apr;9(4):e025813.

42. Mond JM, Arrighi A. Gender differences in perceptions of the severity and prevalence of eating disorders. Early Interv Psychiatry. 2011;5(1):41–9.

43. Jorm AF. Mental health literacy: Empowering the community to take action for better mental health. Am Psychol. 2012 Apr;67(3):231–43.

44. Phillippi J, Lauderdale J. A Guide to Field Notes for Qualitative Research: Context and Conversation. Qual Health Res. 2018;28(3):381–8.

45. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006 Jan;3(2):77–101.

46. Braun V, Clarke V. Successful qualitative research: a practical guide for beginners. Los Angeles: SAGE; 2013. 382 p.

47. Wong L. Data Analysis in Qualitative Research: A Brief Guide to Using Nvivo. Malays Fam Physician Off J Acad Fam Physicians Malays. 2008 Apr 30;3(1):14–20.

48. Wheeldon J, Faubert J. Framing Experience: Concept Maps, Mind Maps, and Data Collection in Qualitative Research. Int J Qual Methods. 2009 Sep;8(3):68–83.

49. Carter N, Bryant-Lukosius D, DiCenso A, Blythe J, Neville AJ. The use of triangulation in qualitative research. Oncol Nurs Forum. 2014 Sep;41(5):545–7.

50. Birt L, Scott S, Cavers D, Campbell C, Walter F. Member Checking: A Tool to Enhance Trustworthiness or Merely a Nod to Validation? Qual Health Res. 2016 Nov;26(13):1802–11.

51. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007 Dec 1;19(6):349–57.

52. Type A and Type B Personality Theory | Simply Psychology [Internet]. [cited 2020 May 11]. Available from: https://www.simplypsychology.org/personality-a.html

53. Darby AM, Hay PJ, Mond JM, Quirk F. Community recognition and beliefs about anorexia nervosa and its treatment. Int J Eat Disord. 2012 Jan;45(1):120–4.

54. Armstrong LL, Young K. Mind the gap: Person-centred delivery of mental health information to post-secondary students. Psychosoc Interv. 2015 Aug 6;24(2):83–7.

55. Gratwick-Sarll K, Mond J, Hay P. Self-Recognition of Eating-Disordered Behavior in College Women: Further Evidence of Poor Eating Disorders "Mental Health Literacy"? Eat Disord. 2013 Jul;21(4):310–27.

56. Early Intervention Strategy [Internet]. Beat. [cited 2020 May 4]. Available from: https://www.beateatingdisorders.org.uk/early-intervention-strategy

57. Strother E, Lemberg R, Stanford SC, Turberville D. Eating Disorders in Men: Underdiagnosed, Undertreated, and Misunderstood. Eat Disord. 2012 Oct;20(5):346–55.

58. Ahern AL, Bennett KM, Hetherington MM. Internalization of the Ultra-Thin Ideal: Positive Implicit Associations with Underweight Fashion Models are Associated with Drive for Thinness in Young Women. Eat Disord. 2008 Jul 4;16(4):294–307.

59. Crisp A. Stigmatization of and discrimination against people with eating disorders including a report of two nationwide surveys. Eur Eat Disord Rev. 2005;13(3):147–52.

60. Angermeyer MC, Dietrich S. Public beliefs about and attitudes towards people with mental illness: a review of population studies. Acta Psychiatr Scand. 2006;113(3):163–79.

61. Bannatyne AJ, Stapleton PB. Attitudes towards anorexia nervosa: volitional stigma differences in a sample of pre-clinical medicine and psychology students. J Ment Health. 2017 Sep 3;26(5):442–8.

62. Rance N, Clarke V, Moller N. The anorexia nervosa experience: Shame, Solitude and Salvation. Couns Psychother Res. 2017;17(2):127–36.

63. Linville D, Brown T, Sturm K, McDougal T. Eating Disorders and Social Support: Perspectives of Recovered Individuals. Eat Disord. 2012 May 1;20(3):216–31.

64. Napolitano F, Bencivenga F, Pompili E, Angelillo IF. Assessment of Knowledge, Attitudes, and Behaviors toward Eating Disorders among Adolescents in Italy. Int J Environ Res Public Health [Internet]. 2019 Apr [cited 2020 May 12];16(8). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6518148/

65. Media portrayal of eating disorders ‘damaging’ | Nursing in Practice [Internet]. [cited 2020 May 4]. Available from: https://www.nursinginpractice.com/article/media-portrayal-eating-disorders-damaging

66. To The Bone is wrong in its portrayal of anorexia – by glamourising such a visible illness, it dangerously misses the point [Internet]. The Independent. 2017 [cited 2020 May 4]. Available from: http://www.independent.co.uk/voices/to-the-bone-anorexia-lily-collins-mental-health-awareness-thinspiration-pro-ana-a7842581.html

67. Morse JM. Determining Sample Size. Qual Health Res. 2000 Jan 1;10(1):3–5.

68. Social Desirability Bias. In: The SAGE Encyclopedia of Social Science Research Methods [Internet]. 2455 Teller Road, Thousand Oaks California 91320 United States of America: Sage Publications, Inc.; 2004 [cited 2019 Nov 2]. Available from: http://methods.sagepub.com/reference/the-sage-encyclopedia-of-social-science-research-methods/n932.xml

69. Bergen N, Labonté R. “Everything Is Perfect, and We Have No Problems”: Detecting and Limiting Social Desirability Bias in Qualitative Research. Qual Health Res. 2020 Apr;30(5):783–92.

70. University Staff [Internet]. Beat. [cited 2020 May 12]. Available from: https://www.beateatingdisorders.org.uk/training-cpd/university-staff

71. Eating Disorders Awareness Week [Internet]. [cited 2020 May 4]. Available from: https://www.beateatingdisorders.org.uk/edaw

72. Bannatyne AJ, Abel LM. Can we fight stigma with science? The effect of aetiological framing on attitudes towards anorexia nervosa and the impact on volitional stigma. Aust J Psychol. 2015;67(1):38–46.

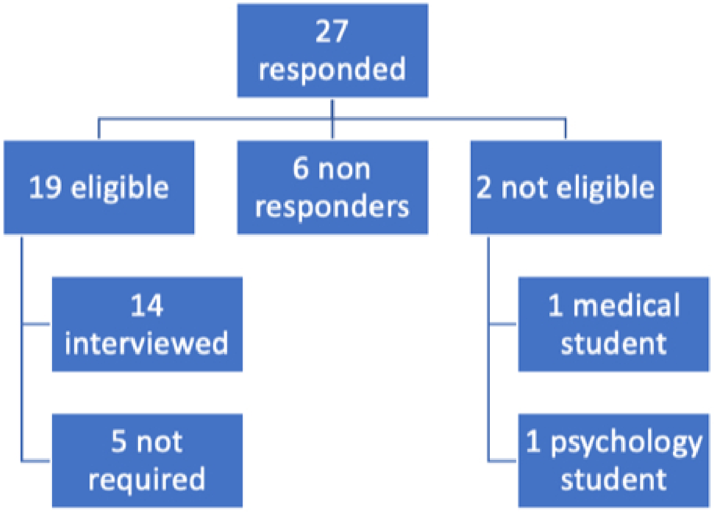
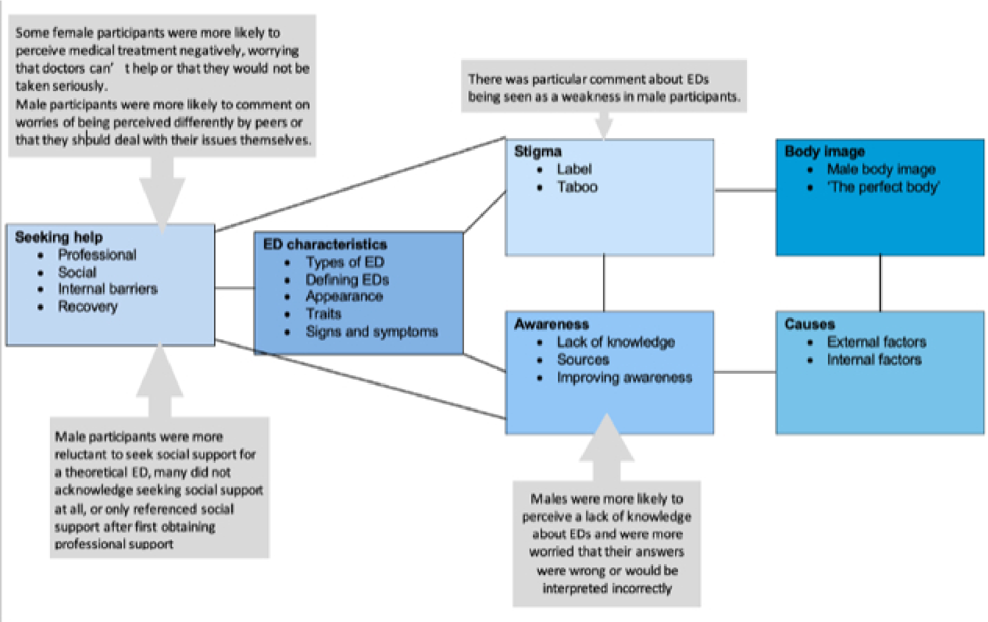


Fig 1: Participant characteristics

54x39mm (300 x 300 DPI)



Some female participants were more likely to perceive medical treatment negatively, worrying that doctors can' t help or that they would not be taken seriously.

Male participants were more likely to comment on worries of being perceived differently by peers or that they should deal with their issues themselves.

There was particular comment about EDs being seen as a weakness in male participants.

Male participants were more reluctant to seek social support for a theoretical ED, many did not acknowledge seeking social support at all, or only referenced social support after first obtaining professional support

Males were more likely to perceive a lack of knowledge about EDs and were more worried that their answers were wrong or would be interpreted incorrectly

Fig 2: Links between themes and impact of biological sex

54x33mm (300 x 300 DPI)

University students’ understanding and opinions of eating disorders: A qualitative study

Additional file 1: Interview guide

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Interview topic guide

Introduction

- Introduce self, outline nature of research and length of interview
- Go through consent form, reiterate that the interview focuses around eating disorders so may involve sensitive topics
    - Ensure they understand they can stop the interview at any time and don't have to answer anything they don't feel comfortable doing
- Obtain verbal informed consent and written consent
- Check they are happy to begin
    - Reiterate there is no wrong answer to any question

Understanding of the term 'eating disorder'

- What do you understand by the term 'mental illness'?
- What do you understand by the term 'eating disorder'?
    - Probe: How is this different to other mental illnesses?
    - Probe: Understanding of different types i.e. anorexia nervosa or bulimia nervosa

Knowledge of eating disorders

- Do you know any of the symptoms of eating disorders?
    - Probe: Symptoms for each type they know about
    - Probe: Characteristics of an eating disorder sufferer
        - Probe: Personality type
        - Probe: How would they feel?
- Are you aware of any of the causes of EDs?
    - Probe: Contribution of social factors, personality, genetics, environment
        - Probe each one
    - Probe: How common do you think eating disorders are?
- Do you know what the treatments are for an eating disorder?
    - Probe: Therapy, inpatient stays, social support
    - Probe: Do you think there would be any difficulties in treatment?
- Do you think a person with an ED is able to recover?
    - Probe: Relapse
    - Probe: Do you think people can ever make a full recovery?
    - Probe: Would it be distressing to have an eating disorder?
- If you suspected a friend had an eating disorder, what would you do?
    - Probe: Role of GP/friends/family
- If you suspected you had an ED, would you be happy to seek help?
    - Probe: Is there anything that would stop you seeking help?
    - Probe: Stigma

Conclusion

- Is there anything else you would like to add about eating disorders or your own experiences?
- Thank participant
- They will receive amazon e-giftcard via their student email

Supplementary information 2: COREQ checklist

Research item	Guide question/description	Result and location in manuscript (section, page number)
Domain 1: Research team and reflexivity		
Personal characteristics		
1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	MM (data collection, page 7)
2. Credentials	What were the researcher's credentials e.g. PhD, MD	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)
3. Occupation	What was their occupation at the time of the study?	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)
4. Gender	Was the researcher male or female?	Female (data collection, page 7)
5. Experience and training	What experience or training did the researcher have?	Degree content included study of qualitative research methods (data collection, page 7)
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	No participants were known to the researcher prior to study commencement (data collection, page 7)
7. Participant knowledge of the interviewer	What did the participants know about the researcher? E.g. personal goals, reasons for doing the research	Participants were aware of the researcher's demographics as they were outlined in the participant information sheet. This informed participants the interviewer was a fourth-year medical student conducting the project as part of their intercalated degree in Psychological Medicine (data collection, page 7)
8. Interviewer characteristics	What characteristics were reported about the interviewer/facilitator? E.g. bias, assumption, reasons and interests in the research project	Participants were aware the interviewer was a medical student conducting the research as part of her Psychological Medicine intercalation. Participants were informed the study was looking at eating disorders (EDs) as per the participant information sheet (data collection, page 7)
Domain 2: Study design		
Theoretical framework		
9. Methodological orientation and theory	What methodological orientation was stated to underpin the study? E.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	Open coding with inductive thematic analysis (data analysis, page 8)
Participant selection		
10. Sampling	How were participants selected? E.g. purposive, convenience, consecutive, snowball	Purposive sampling based on gender from a convenience sample of University of Birmingham students (participants, page 6)
11. Method of approach	How were participants approached? E.g. face-to-face, telephone, mail, email	The study was advertised via advertisements placed around campus and online via Facebook. Interested participants were sent a participant information sheet and eligibility questionnaire (recruitment, page 6)
12. Sample size	How many participants were in the study?	Fourteen (results, page 9)

13. Non-participation	How many people refused to participate or dropped out? Reasons?	Six participants were lost to follow up and did not return the eligibility questionnaire or arrange and interview. 5 participants were not required as data saturation was reached (recruitment, page 6 and fig 1)
Setting		
14. Setting of data collection	Where was the data collected? E.g. home, clinic, workplace	Data was collected in private rooms in the University of Birmingham Library (data collection, page 7)
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	No.
16. Description of sample	What are the important characteristics of the sample? E.g. demographic data, date	Seven males and seven females. The majority were White British ethnicity. A wide variety of courses were studied, and students ranged in age from 18 to 26 (results, page 9)
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	Interviews were semi-structured using a topic-guide. This was piloted on individuals known to the researcher who met the eligibility criteria prior to interview commencement (data collection, page 7)
18. Repeat interviews	Were repeat interviews carried out? If yes, how many?	No (data collection, page 7)
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	Interviews were audio-recorded using a password protected Dictaphone (data collection, page 7)
20. Field notes	Were field notes made during and/or after the interview or focus group?	Field notes were made after each interview (data analysis, page 8)
21. Duration	What was the duration of the interviews or focus group?	Interviews ranged from 20 to 37 minutes with a mean average of 28 minutes (data collection, page 7)
22. Data saturation	Was data saturation discussed?	Data saturation was met at n=14 (recruitment, page 6)
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	No.
Domain 3: Analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	The primary researcher (MM) coded all transcripts. Supervisor (SG) independently coded two transcripts (data analysis, page 8)
25. Description of the coding tree	Did authors provide a description of the coding tree?	No.
26. Derivation of themes	Were themes identified in advance or derived from the data?	Themes were derived inductively from the data (data analysis, page 8)
27. Software	What software, if applicable, was used to manage the data?	Microsoft Excel and NVivo were used to organised codes. Audio-recordings were listened to via Olympus dictation software (data analysis, page 8)
28. Participant checking	Did participants provide feedback on the findings?	All participants were sent a summary of the main themes and ideas derived from their interviews. 11 participants replied saying this was a correct interpretation of their viewpoints (data analysis, page 8)
Reporting		

29. Quotations presented	Were participant quotations presented to illustrate the themes / findings? Was each quotation identified? e.g. participant number	Yes, comments were supported using direct participant quotes. Participants were assigned a gender-specific pseudonym which was used in quote presentation (results, page 9)
30. Data and findings consistent	Was there consistency between the data presented and the findings?	Yes (results, figure 2, table 2 and table 3, pages 9-29)
31. Clarity of major themes	Were major themes clearly presented in the findings?	Yes (results and figure 2, pages 9-29)
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	Yes, all themes are presented (results and figure 2, pages 9-29)