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

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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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4 1 **Abstract**

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6
7 2 **Objective:** To explore university students' beliefs and opinions of EDs, their knowledge of
8
9 3 symptoms, treatment and help sources and how these are influenced by biological sex.

10
11
12 4 **Design:** A qualitative study, using semi-structured interviews analysed using inductive
13
14 5 thematic analysis.

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16
17 6 **Setting:** A University in the West Midlands, UK

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19
20 7 **Participants:** Seven female and seven male university students.

21
22
23 8 **Results:** Analysis revealed six themes, each with subthemes: ED characteristics, causes, body
24
25 9 image, seeking help, stigma and awareness. Students displayed poor awareness towards ED
26
27 10 signs and symptoms, causes and help sources. Students were not stigmatising towards EDs,
28
29 11 but many perceived them as a female problem and believed society to be stigmatising.
30
31 12 Many referenced informal sources of information such as social media and expressed a
32
33 13 desire for ED teaching. Sex did not have a significant influence on knowledge or opinions of
34
35 14 EDs in this study, however there were some differences, for example some males were more
36
37 15 likely to see EDs as a weakness and to perceive themselves as having low levels of
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39 16 knowledge.
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49 18 **Conclusions:** University students show poor awareness of certain aspects of ED-MHL
50
51 19 including help sources and symptom recognition. Although students were not stigmatising of
52
53 20 EDs themselves, many perceived high levels of public stigma. This, alongside poor
54
55 21 knowledge, may delay help-seeking. Campaigns educating students and the public about EDs
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3 22 would aid earlier diagnosis, improving long-term outcomes. Further research into awareness
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5
6 23 and knowledge in other populations would be beneficial.
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11 25 **Keywords:** Eating disorder, qualitative research, mental health literacy, social stigma,
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14 26 students, attitudes, health knowledge, opinions.
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37 34 **Article summary: Strengths and limitations of this study**

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40 35 • First qualitative exploration of knowledge and understanding of eating disorders in
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42 36 UK university students.
43
44 37 • Qualitative methodology allowed broad exploration and insight about perceptions of
45
46 38 eating disorders in this at-risk population.
47
48 39 • Member validation and analyst triangulation with an experienced qualitative
49
50 40 researcher strengthen the methodology.
51
52 41 • Some participants may have been hesitant to disclose their true views due to social
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54 42 desirability bias.
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3 43 • Study was advertised as research about eating disorders, so participants could have
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6 44 volunteered because they have an interest and therefore more knowledge about
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8 45 eating disorders.
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37 55 **Introduction**

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40 56 Eating disorders (EDs) are a class of severe mental illnesses(1) that affect 1.25 million people
41
42 57 in the UK(2). They are characterised by abnormal eating behaviours and attitudes that have
43
44 58 a significant impact on the physical health of those suffering(3), resulting in complications
45
46 59 including osteoporosis and cardiac arrhythmias(4). These go hand in hand with psychiatric
47
48 60 comorbidities such as depression(5). For these reasons, one ED subtype, anorexia nervosa
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50 61 (AN), has the highest mortality rate of any psychiatric condition(6).
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3 63 Notwithstanding the significant mortality and morbidity associated with EDs, statistics show
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6 64 it takes individuals an average of 91 weeks to realise they have an ED, on top of the 58
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8 65 weeks they typically wait before presenting to their doctor(7). Recent data suggests a
9
10 66 shorter duration of untreated eating disorder is associated with increased likelihood of
11
12
13 67 remission(8). However, fewer than 20% of individuals who screen positive for an ED go on to
14
15 68 receive treatment(9,10), highlighting a significant treatment gap, and leaving individuals
16
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18 69 vulnerable to suffering debilitating long-term outcomes.
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24 71 This delay in health seeking is postulated to be due, in part, to poor mental health literacy
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26 72 (MHL) and the fear of stigma attached to EDs(11). MHL refers to an individual's 'knowledge
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28
29 73 and beliefs about mental disorders that aid the recognition, management or prevention of
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31 74 these disorders'(12). Studies show members of the public attribute EDs to personal
32
33
34 75 shortcomings and perceive ED sufferers as vain and self-obsessed(13,14). This can result in
35
36 76 high levels of self-stigma, whereby an ED sufferer turns public stigma towards
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38
39 77 themselves(15), lowering self-worth and self-efficacy, and further delaying help-seeking(16).
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44 79 The ability to recognise ED behaviours has been shown to be a significant factor in
45
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47 80 improving early-intervention and help-seeking(17). Furthermore, an ED sufferer's social
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50 81 network has been shown to be fundamental in improving ED identification and encouraging
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52 82 treatment-seeking(18).
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57 84 However, research indicates the public display poor MHL towards various mental
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60 85 illnesses(19), including EDs(20,21), suggesting the ability of the public to recognise an ED in

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3 86 themselves or in others is sub-optimal. In addition, eating disorder mental health literacy
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5 87 (ED-MHL) appears less systematically investigated than MHL relating to other mental
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8 88 illnesses, and therefore research in this area lacks the ability to inform relevant health
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10 89 promotion and early intervention programmes that seek to reduce the burden of these
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13 90 conditions(22,23).

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19 92 In the UK, the highest incidence of EDs occurs in girls between 15 and 19 years of age(24),
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21 93 with symptom duration often lasting 5-8 years(2). Unsurprisingly, there is a high prevalence
22
23 94 of EDs in university populations(25), where normalisation of ED behaviours such as
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25
26 95 restrictive dietary intake and overexercising alongside a loss of external accountability can
27
28 96 exacerbate symptoms and lead to the development of new, unhealthy food behaviours(26).
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31 97 Furthermore, in a survey of UK university students by the ED charity Beat, 32% of students
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33 98 with an ED were diagnosed at university, however 69% reported difficulties accessing
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36 99 treatment(27).

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42 101 Literature suggests that men constitute at least 25% of UK ED cases(28). However, research
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44 102 indicates the public expectation that EDs are primarily a female issue limits young men's
45
46 103 ability to recognise their symptoms and delays them from seeking appropriate help(29,30).
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49 104 Sex bias is also indicated, with studies indicating that men hold more negative attitudes
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51 105 towards EDs(31,32) and have generally poorer MHL than females(20).

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57 107 The majority of previous studies into ED-MHL have been quantitative, and have taken place
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60 108 outside of the UK, where different cultural norms, health systems and mental health

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3 109 education may mean results are not necessarily transferrable to the UK(33). Although useful
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6 110 for determining the general scope of ED knowledge and associated stigma, the pre-prepared
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8 111 questions in such studies do not allow for volunteering of further opinions not expressed in
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11 112 the questionnaires. Additionally, it does not allow in-depth exploration of individual beliefs
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13 113 and attitudes.

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19 115 Therefore, there is a need for extensive qualitative research to be carried out in this area.

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21 116 Yet, existing UK qualitative literature into ED-MHL is lacking, only seeking responses from

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23 117 females(34), meaning difference in responses between males and females cannot be

24
25 118 inferred. Some qualitative literature exists from other countries, but this literature is also

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27 119 incomplete, focussing only on ED causes(21), or solely on AN(35). Furthermore, none of

28
29 120 these studies concentrated on at-risk populations such as university students.

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37 122 Research focussed on university students, to determine if differences in understanding and

38
39 123 opinions of EDs exist between these at-risk young males and females can give an insight into

40
41 124 the ED-MHL of this population, identifying areas where greater education is needed to

42
43 125 improve help-seeking and reduce stigma. This paper reports on a qualitative interview study

44
45 126 which aimed to determine university students' ED-MHL, exploring beliefs and opinions of

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47 127 EDs and their knowledge of ED symptoms, treatment and sources of help. It also sought to

48
49 128 determine the impact of sex on ED perceptions and knowledge.

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57 130 **Materials and methods**

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3 131 **Participants**
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6 132 Participants were recruited from a convenience sample of English speaking University of
7
8 133 Birmingham students(36), chosen purposively to ensure equal numbers of male and female
9
10 134 participants were recruited(37). To investigate lay perceptions of EDs, students with a
11
12 135 previous formal diagnosis of an ED were excluded, alongside students studying a healthcare
13
14 136 degree or psychology, as they were assumed to have greater ED knowledge than other
15
16 137 university students(38). To focus on UK perceptions, international students and international
17
18 138 exchange students were also excluded.
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24 139 **Patient and public involvement**
25

26 140 No patient involved
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29 141 **Recruitment**
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31
32 142 Participants were recruited via advertisements placed around the university campus and
33
34 143 posted on a University of Birmingham Facebook group(39).
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41 145 Participants who responded were emailed a participant information sheet and eligibility
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43 146 questionnaire to enable purposive sampling based on sex, and ensure any non-eligible
44
45 147 individuals were excluded(37). Participant recruitment continued until data saturation was
46
47 148 reached (Fig 1).
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54 150 **Fig 1: Participant recruitment process**
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3 151 **Fig 1 legend:** Individuals who responded contacted the researcher to enquire about the
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5 152 study. Non responders either did not return the eligibility questionnaire or did not confirm
6
7 153 interest in the study. Five participants were not required as data saturation was reached.
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14 155 ***Data collection***

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17 156 Data was collected using face to face, semi-structured, audio-recorded interviews(40). These
18
19 157 took place in a private room in the University of Birmingham library during January and
20
21 158 February 2020. No repeat interviews were undertaken. Written, informed consent was
22
23 159 obtained from each participant prior to their interview.
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30 161 All interviews were carried out by MM, a female, white British medical student intercalating
31
32 162 in psychological medicine. Interview duration ranged between 20 and 37 minutes, with a
33
34 163 mean of 28 minutes. The researcher did not know any participant prior to study initiation,
35
36 164 and all were aware of the interviewer's demographics as outlined in the participant
37
38 165 information sheet, prior to their interview. Upon interview completion, each participant
39
40 166 received a £15 Amazon voucher to thank them for their time.
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48 168 An interview guide (supplementary information 1) of open-ended questions informed by
49
50 169 relevant literature(34,41,42) was used to explore key areas of MHL(43), including help-
51
52 170 seeking, stigma and the knowledge of ED symptoms, causes and treatments (see
53
54 171 supplementary information 1). This ensured consistency across interviews and that
55
56 172 appropriate topics were covered to answer the research question. The interview guide was
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3 173 piloted on participants known to the researcher who met the eligibility criteria to ensure
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5 174 questions were accessible to participants. Pilot data was not included in the study.
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11 176 **Data analysis**
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14 177 Following each interview, field notes were taken to contextualise interviews and reflect on
15
16 178 the researcher's impact on the interviews(44). Interviews were transcribed verbatim by the
17
18 179 researcher and listened to twice to ensure transcript accuracy. To establish participant
19
20 180 anonymity and confidentiality, each was allocated a numerical ID used for data collection
21
22 181 and analysis.
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30 183 Data was thematically analysed using Braun and Clarke's six step process(45), as it allows
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32 184 rich interpretation of data. An inductive approach was taken, therefore analysis was data
33
34 185 driven, rather than theory driven(46). Transcripts were read twice to ensure familiarisation.
35
36 186 Open coding was then performed manually, and codes inputted into the software NVivo for
37
38 187 clarity and organisation(47). As analysis progressed, codes were refined and sorted into
39
40 188 themes and subthemes using an Excel spreadsheet, NVivo and thematic maps(48). This
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42 189 allowed codes to be compared between participants and between sexes.
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50 191 To enhance the quality of the analytic process, investigator triangulation occurred(49). Two
51
52 192 transcripts were coded independently by SG, an experienced qualitative researcher. MM
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54 193 and SG then met to discuss analysis and agree on themes, before meeting again to further
55
56 194 refine and define themes. Furthermore, to ensure credibility of results, member validation
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		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	

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

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

202 **Results**

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

206 **Table 1: Participant characteristics**

		Liberal arts and natural sciences												✓		1
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207 **Table 1 legend:** Participant age ranged from 18-26. Equal numbers of male and female

208 participants took part in the study and 86% of participants were of white British ethnicity.

209 Participants studied a range of university courses, including arts and law and social sciences.

210

211 Six themes, each with subthemes, were interpreted from the data: ED characteristics,

212 causes, body image, seeking help, stigma and awareness. Themes represent central

213 attitudes and ideas discussed throughout interviews. Some reflect areas of the interview

214 guide, however others, such as stigma, were mentioned by participants without directly

215 being led by the interview guide. Fig 2 summarises the links between themes and the impact

216 of sex on results.

217

218 **Fig 2: Links between themes and impact of biological sex**

219 **Fig 2 legend:** Each box contains one theme and associated subthemes. Links between

220 themes are represented by a black line.

221

222 Themes are displayed with supporting quotations, presented with biological sex specific

223 pseudonyms to maintain confidentiality. Superfluous text within quotations has been

224 removed and is represented by an ellipsis [...].

225

226 ED characteristics

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3 227 **Types of ED**
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6 228 All participants mentioned AN, and most were able to attempt a definition. Many
7
8 229 participants also cited over-eating as an ED, however only three specifically defined binge
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10 230 eating disorder. Though 12 participants were able to name bulimia nervosa (BN), many were
11
12 231 hesitant to define and describe it:
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19 233 'I think most people have some kind of idea of what anorexia is, bulimia, I think it's
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21 234 more complicated' (David, 21)
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27 236 **Defining EDs**
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30 237 Many participants believed EDs to be a psychological issue and defined them as a mental
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32 238 illness. Furthermore, EDs were frequently recognised as a spectrum, a scale between
33
34 239 disordered eating and a severe ED:
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41 241 'I think they're almost like a spectrum, I think some people have a really bad eating
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43 242 disorder and it affects them in a really bad way but I think a lot of people can have
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45 243 unhealthy relationships with food that but they stay at a sort of stable weight but it's
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47 244 more of the mental thoughts they have about it' (Chelsea, 22)
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54 246 **Appearance**
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3 247 12 participants perceived EDs as a predominantly female problem, with few mentioning EDs
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6 248 in men. They were also frequently associated with younger people, believed to affect those
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8 249 of school and university age:
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14 251 'Younger women are the main category, so teenagers to like early mid-twenties I'd
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16 252 say, so that captures students' (Rebecca, 21)

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22 254 'If I see a guy and he's skinny [...] I don't think there's any chance of it being an eating
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24 255 disorder, he's just skinny' (David, 21)

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30 257 Numerous participants highlighted the idea that you do not have to be underweight to have
31
32 258 an ED. However, the perception that individuals with EDs are 'skinny' or 'skeletal' was held
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34 259 by 13 participants, and many described the impact of EDs as severe, believing sufferers to
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36 260 appear 'ill-looking' and 'gaunt':
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44 262 'So skinny that you can see their hip bones protruding, knee bones look massive in
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46 263 comparison to the rest of their leg because they're so big and like clothes hanging off
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48 264 them' (Katie, 19)

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54 266 **Traits**

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57 267 *Vulnerable*
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3 268 Whilst the majority of participants recognised EDs as challenging and impactful, some male
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6 269 participants were more likely to associate EDs with vulnerability, perceiving sufferers as
7
8 270 'fragile':
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14 272 'I'd see them as more fragile I think, I'd see them more [...] like a vase' (William, 19)
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20 274 *Obsessive*

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23 275 There was the view that individuals with EDs are obsessive and seeking perfection, with two
24
25 276 students commenting on a 'type A' personality putting someone at increased risk of an ED
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27
28 277 (52):
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31 278

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33 279 'If you're quite neurotic so you're a bit strung, highly strung up maybe they're a
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35
36 280 perfectionist or someone really has to be yeah really controlling about things in life'
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38 281 (Callum, 26)
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44 283 Control was mentioned by five participants, four of whom were female. EDs were seen as a
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47 284 coping mechanism, by which individuals can take control of aspects of their lives:
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52 286 'They get some sort of, I wouldn't say enjoyment but satisfaction with having the
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55 287 control of food especially if they don't have the control of anything else' (Katie, 19)
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3 289 *Image conscious*
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6 290 Seven students believed ED sufferers hold a low self-worth, perceiving them to care a lot
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8 291 about their own image and what others thought of them:
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14 293 'Lack of confidence as a trait would also make you a lot more sort of conscious of
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16 294 how you're seen' (Shaun, 19)
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23 296 ***Signs and symptoms***
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26 297 Perceived signs and symptoms freely volunteered by participants are presented in table 2.
27

28 298 Students were generally unaware of specific ED symptoms and which symptoms were
29
30 299 associated with specific EDs. Some symptoms were recognised more than others, specifically
31
32 300 under-eating and over-eating. Vomiting and binge eating and purging were also frequently
33
34 301 mentioned, and all participants that recognised these symptoms associated them with BN.
35
36 302 Despite seven participants describing EDs as visible illnesses with numerous physical signs,
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38 303 many perceived difficulties in recognising signs and symptoms, describing EDs as conditions
39
40 304 that are not easy to spot:
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48 306 'It's not really as apparent, we don't see people naked or in their underwear every
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50 307 day, you just assume someone's fine' (Danielle, 21)
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57 309 **Table 2: Perceived signs and symptoms of EDs**
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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)

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

312

313 Causes of EDs

314 Many male students were unaware of potential causes on initial questioning. Perceived
 315 causes, after prompting in many cases, are presented in table 3. Several students referenced
 316 internal factors such as a psychological comorbidity or low self-worth as major ED causes. Of

317 the seven individuals who believed low self-worth could contribute, five were male.

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

319

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

321

322 **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)

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

325

326 Body image

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

330

331 'I think it affects lots of people, like sort of body dysmorphia in general, I think like in
 332 some kind of mild forms' (Adam, 21)

333

334 ***'The perfect body'***

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3 335 'The perfect body' was something that had been repeatedly presented to many participants
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6 336 from a young age, with individuals with this body type deemed more attractive to society
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8 337 and the opposite sex:
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14 339 'If you don't look like that, or you're not like aiming to look like that [...] then you're
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16 340 unhealthy or you're not good enough or you're not attractive [...] because you have
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18 341 to fit into like one of the groups, one of the standards presented' (Grace, 22)
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25 343 All students cited media pressure as a cause of poor body image, with many reflecting on
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27 344 increased pressure due to the rise in social media, resulting in a constant comparison of
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29 345 oneself against others:
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32 346
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35 347 'Because of social media, you're always comparing yourself to other people, I think
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37 348 people feel more in competition with other people all the time [...] I don't think it's
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39 349 healthy on body image' (Rebecca, 21)
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46 351 Many students believed females to be under greater pressure, citing increased female body
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48 352 representation in the media and sexist viewpoints towards female bodies as mechanisms for
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50 353 this. Ten participants referred to the 'female ideal' of being slim:
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3 355 'What you'd see in something like London fashion week, tall skinny models that
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6 356 would have potentially a thigh gap, a flat stomach, no stretch marks, not much
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8 357 cellulite' (Katie, 19)
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14 359 Contrastingly, the 'male ideal' was described as heavily muscular:
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20 361 'A six pack, like well-toned, just a good size of muscles like all over' (Andrew, 19)
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26 363 ***Male body image***
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29 364 Despite acknowledging that males also experience pressure to look a certain way, students
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31 365 generally inferred that males care less about image and are not bothered about how other
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33 366 people perceived them. This was supported by male participants being more likely to
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35 367 comment that body image worries did not personally affect them:
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42 369 'Myself I'm not too bothered, but men in general if I had to be very stereotypical, I
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44 370 would say men don't care as much about their image' (Joshua, 20)
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50 372 Various students commented on the societal stigma they believe exists around men's
51
52 373 bodies, with male body image viewed as less inclusive and spoken about than female body
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54 374 image. Due to this, some participants commented that many males do not talk about their
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56 375 bodies:
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6 377 'The stereotype of not showing weakness may mean that they're less willing to open

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9 378 up' (Shaun, 19)10
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1314 380 Seeking help

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17 381 On the whole, many students were unaware of the help available for EDs, but with
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20 382 prompting 12 participants were able to suggest some sources of professional help. Seven
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22 383 participants recognised the importance of seeking social support. Many students
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24 384 commented on potential treatment barriers, including perceived negatives of medical
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26 385 treatment and worries about self-image.

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3233 387 **Professional**

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36 388 Twelve participants recognised therapy as a potential treatment. Further sources of formal
37
38 389 treatment included treatment in specialist hospitals and nasogastric feeding. Many
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41 390 participants, especially females, commented on issues with seeking medical treatment,
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43 391 including perceived lack of treatment availability and the belief that doctors would not take
44
45 392 EDs seriously:

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51 394 'With the NHS they have so much on their plate and there's underfunding and stuff
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54 395 so I just personally wouldn't want to go there for them. And as well GPs can be a bit
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56 396 snappy and try and like rush you and stuff' (Chelsea, 22)

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3 398 Ten participants said they would be willing to seek professional help, the majority
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5
6 399 mentioned consulting their GP or seeking a therapist. Male participants were more likely to
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8 400 seek only professional support or seek social support after first pursuing professional
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10 401 support. Furthermore, some mentioned first researching online about what help was
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13 402 available for EDs:
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19 404 'Probably look on NHS website first I'm sure they'd probably say go to a doctor and
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21 405 then I'd probably get a referral from the doctor' (Callum, 26)
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27 407 **Social**
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29
30 408 The majority perceived social support as vital in both recovery and maintaining recovery.
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32 409 Five participants mentioned greater willingness to seek social rather than professional
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35 410 support, highlighting the ability of the social network to encourage help-seeking:
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41 412 'I'd probably ask for someone's advice on whether I should go to the doctor' (Grace,
42
43 413 22)
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49 415 Despite perceived benefits of seeking social support, many commented on potential barriers
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51 416 that would prevent them from seeking social support, including not wanting to bother
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54 417 others with their problems and a fear of being judged. All male participants worried about
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56 418 being perceived differently by peers:
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3 420 'If I suspected one of my friends of having an eating disorder I'd see them as fragile
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6 421 and delicate, I wouldn't want the people close to me to see me as fragile and delicate
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8 422 cos I wouldn't want people's opinions to change about me' (William, 19)
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11 423

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13
14 424 The desire to help those with an ED was emphasised by 13 participants, however six
15
16 425 participants recognised that helping someone with an ED was often difficult. Participants
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19 426 were generally sympathetic, suggesting a need to be supportive and encourage those
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21 427 suffering to seek professional support:
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27 429 'I'd encourage them, and if they were like I want to get medical help I'd like come
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29 430 with them' (Thomas, 18)
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34
35 432 Notwithstanding the support offered, many participants predicated a subconscious change
36
37 433 in behaviour that would come with knowing someone had an ED. Nine participants
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39
40 434 mentioned a need to act carefully around those with EDs, particularly in situations involving
41
42 435 food. Five participants also recognised the need to maintain a sense of normality:
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48
49 437 'I'd want to be a lot more careful with how I acted around them but then again whilst
50
51 438 I'd be a lot more careful I'd also very much try to act that nothing has changed, so
52
53 439 around them I'd try and act exactly the same' (William, 19)
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59 441 ***Internal barriers***
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3 442 The extent that personal beliefs and coping mechanisms limited help-seeking was also
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6 443 discussed. Seven participants highlighted the struggles that come with seeking help,
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8 444 perceiving EDs as difficult to discuss, and help-seeking as embarrassing and scary:
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14 446 'I can imagine that would be a really hard conversation, to say like mate I think you
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16 447 might have an eating disorder, I wouldn't want to hear that, I don't think anyone
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18
19 448 would want to hear that' (Thomas, 18)
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24
25 450 The internalisation of one's problems was mentioned by three participants. This came hand
26
27 451 in hand with a perception that EDs are not a serious issue, and therefore something that
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30 452 could be easily dealt with by oneself. Furthermore, many participants held the belief that
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32 453 individuals with EDs may not want to recover, or may lack the intuition to realise they have a
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34 454 problem:
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40 456 'I imagine some people just don't even know that they, it's a problem for themselves
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42 457 and they could be putting themselves at risk' (Grace, 22)
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49 459 **Recovery**

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52 460 Eleven participants believed it was possible to recover from an ED. Despite this, participants
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54 461 made frequent reference to the idea that the ED would remain with you, and that it would
55
56 462 be easy to relapse. Ten participants commented on the ease of falling back into previous
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59 463 behaviours or thoughts:
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6 465 'I think it would be difficult for them to never have them same thoughts in their head
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8 466 again. So, I think the thoughts will always be there it just depends, they can probably
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11 467 learn to live with it rather than them let it take over their life' (Chelsea, 22)
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14 468
1516
17 469 Stigma
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20 470 The majority of participants recognised EDs, and mental health conditions in general, as
21
22 471 highly publicly stigmatised.
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25 472
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2728 473 **Label**
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31 474 Some participants commented on the impact of EDs on image. Five students perceived EDs
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33 475 as conditions that are shamed within society, commenting that society has a tendency to
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35 476 label people with mental health issues:
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42 478 'I wouldn't want it to be perceived as a part of my identity, I wouldn't want to be
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44 479 known as the boy with an eating disorder rather than anything else about me, I
45
46 480 wouldn't want that to be what people sort of defined me as' (Shaun, 19)
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53 482 EDs being seen as a 'weakness' was mainly specified by male participants, with three
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55 483 participants stating this as a reason they would not tell anyone they had an ED:
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3 485 'I think I'd find it hard to tell my friends about it as well, like show weakness rather
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6 486 than just coming across as someone who's laid back and calm' (Shaun, 19)
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11 488 ***Taboo***

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14 489 A number of students saw EDs as conditions that are rarely discussed by society. Many held
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16
17 490 the perception that mental illnesses were 'taboo'. Additionally, six students commented on
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19 491 EDs being poorly understood within the community, seeing society as ignorant towards the
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21
22 492 seriousness of the conditions:
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28 494 'I feel like for a long time it wasn't really recognised and therefore people didn't, if
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30 495 you had an eating disorder it was sort of why are you be being difficult rather than
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32 496 being like oh let's work, let's find a way to work around this' (Andrew, 19)
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37
38 498 In addition, a number of students saw EDs as conditions that were 'difficult to relate to',
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40
41 499 citing this as a reason why many find it hard to understand EDs:
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44 500

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46
47 501 'If someone's feeling anxious they can talk to their friends about it, there'd be some
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49 502 level of empathy and them understanding that, I think it would be much harder to
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51 503 talk to a friend and expect them to, well have them understand an eating disorder,
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53 504 because it's not a shared thing' (David, 21)
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60 506 Awareness

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3 507 Throughout the interviews there was a general hesitancy and lack of awareness when
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6 508 discussing certain aspects of EDs.
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11 510 ***Lack of knowledge***
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14 511 Ten participants, the majority of whom were male, perceived themselves to have poor
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16
17 512 knowledge about certain aspects of EDs. Many were hesitant to answer, and lacked
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19 513 confidence in their answers:
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22 514

25 515 'I don't know a huge amount, so I definitely don't have great knowledge on it'

27 516 (Callum, 26)
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33 518 Furthermore, many participants stated their knowledge as 'assumptions' or 'clichés', with
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36 519 male participants particularly worried that their answers were incorrect or would be
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38 520 interpreted improperly:
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44 522 'I don't want my opinions to come across like I know what I'm talking about almost, if
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46 523 you know what I mean' (Joshua, 20)
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52 525 ***Sources***
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3 526 Nine participants mentioned knowing an ED sufferer, evidencing the frequently held
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6 527 perception that EDs are common. Many cited experiences of these individuals as sources of
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8 528 their knowledge, particularly around treatment and symptoms:
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14 530 'I think now they're quite common, I feel like everyone knows someone who's
15
16 531 struggled with an eating disorder' (Rebecca, 21)

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22 533 Six participants mentioned being formally taught about EDs in school, however many
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24 534 reflected that these lessons were 'basic' and were unable to recollect what specifics they
25
26
27 535 had been taught:
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33 537 'We had like the basic kind of PSHE lessons about it but nothing that could have like
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35 538 helped anyone, or not enough I don't think' (Chelsea, 22)

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40
41 540 The majority of participants cited informal sources such as social media and films as their
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43
44 541 sources of ED knowledge:
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50 543 'A lot of what I think about eating disorders is from movies and TV shows, rather
51
52 544 than fact' (Grace, 22)

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3 546 However, some participants acknowledged that they were sceptical about the accuracy of
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6 547 this information. Furthermore, a number of students made comment about how the
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8 548 representation of EDs in the media, and their perceived commonness within the younger
9
10 549 generation had made them sensitised to the signs and consequences of EDs:
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15
16 551 'With the lens of social media [...] when I first found out about eating disorders, at 14
17
18 552 or 15, made it seem almost, I don't want to say too ok but it almost normalised it to a
19
20
21 553 point where I actually didn't realise for a little bit how serious an eating disorder was'
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23
24 554 (Thomas, 18)
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26

27 555
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29
30 556 ***Improving awareness***
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33 557 Seven participants commented on the need to improve ED teaching. For many, the need to
34
35 558 educate individuals about the signs and symptoms and promote help-seeking was of
36
37 559 particular importance:
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42
43 561 'It flagged them up as being as issue but never really went into depth with what to do
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45 562 about them or how to act with someone who has those and so I found that I had to
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47
48 563 learn it for myself rather than learning from like lessons and things' (Shaun, 19)
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54 565 Despite the perceived need for better teaching, a number of students commented on
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56 566 positive steps in society that are improving ED awareness. Many commented on improving
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3 567 body representation in the media and five students commented on sources of positive ED
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6 568 representation, believing this to be beneficial to those suffering.
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11 570 'I got a lot of knowledge from social media and stuff like that, a lot of it really positive
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13
14 571 stuff, you know hashtags on twitter or stuff on Tumblr, people sharing their
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16 572 experiences and stories and it's all been from a very supportive, positive light'
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19 573 (Thomas, 18)
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22 23 575 **Discussion**

24 25 576 **Main findings**

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28 577 This study, to the best of the author's knowledge, is the first UK qualitative study exploring
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31 578 ED-MHL in university students. Generally, the study highlighted the university students
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34 579 interviewed had a broad awareness of EDs, however there were areas where knowledge
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36 580 was lacking, even in this highly educated group.
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41 582 Whilst many students were able to state AN and BN as EDs, many were hesitant to define
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43 583 and describe BN, and only a few were able to suggest further ED types. Furthermore, though
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45
46 584 many students were able to name some signs and symptoms when prompted, there was a
47
48 585 great deal of uncertainty, and many struggled to link particular symptoms to specific EDs.
49

50
51 586 The findings of this study are in keeping with a previous quantitative study of members of
52
53 587 the public, in which participants showed difficulty discriminating between ED diagnoses(53).

54
55 588 There was no apparent difference in ED identification between sexes, in contrast to a
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57
58 589 previous vignette study of Canadian post-secondary students, in which males had greater
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3 590 difficulty identifying ED diagnoses(54). Awareness of ED symptoms is important, as poor
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6 591 symptom recognition is associated with reduced likelihood of help-seeking, and increased
7
8 592 risk of long-term outcomes(55,56). Many students in this study perceived EDs as a female
9
10 593 problem. This perception was also reported in a previous qualitative study of young people,
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12
13 594 who also believed AN to be a female issue(35). EDs are already considered underdiagnosed
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15 595 in men(57), therefore this belief, in this at risk population, can result in young men being less
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18 596 likely to recognise their symptoms as indicative of an ED, and in them being less likely to
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20 597 seek help(30).

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24
25 599 The greatest perceived cause of EDs was media pressure. These results are similar to a
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27
28 600 previous qualitative study in members of the public, in which media-ideals were a major
29
30 601 perceived cause of EDs(21). Furthermore, many participants made reference to the 'thin-
31
32 602 ideal' presented to young women in the media. This perception is common, with previous
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34
35 603 research in UK students highlighting how a desire for a thin, often unattainable body type is
36
37 604 associated with ED development(58).

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42 606 Although participants in this study did not generally hold stigmatising attitudes towards EDs,
43
44
45 607 several perceived EDs as highly stigmatised in the community. This perception is in line with
46
47 608 previous studies, which have shown public attitudes towards EDs are highly conducive to
48
49
50 609 stigma(14,59). Higher educational status is correlated with liberal views towards mental
51
52 610 illness, which may explain the low levels of stigmatisation apparent in the participants of this
53
54
55 611 study(60). Many students cited fear of public stigma as a reason for not seeking help, further
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57 612 enhancing the idea that fear of public stigma is a major cause of delayed help-seeking(11).
58
59 613 Previous studies focussed on ED stigma in university students have highlighted significant
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3 614 sex bias, with males exhibiting higher ED stigma than females(31,61). The results of this
4
5 615 study are not in keeping with this literature, as differences in stigmatising viewpoints were
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7
8 616 not as apparent between male and female participants, though some differences were
9
10 617 observed.

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13 618

14
15 619 Encouragingly, the majority of participants said they would seek professional help for an ED;
16
17 620 however, many were unsure of what help is available, and many made comments about
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20 621 perceived negatives of professional support, such as not being taken seriously. These
21
22 622 worries are in keeping with previous research(62) and could act as an explanation as to why
23
24 623 those with EDs take so long to seek treatment(8). Most participants expressed sympathy and
25
26
27 624 a desire to help those with an ED, and many recognised the importance of social support,
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29
30 625 which has been shown to be highly influential in ED recovery(63).

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32 626

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34
35 627 Many participants perceived themselves as having poor or inaccurate knowledge. With this
36
37 628 in mind, the majority of participants referenced informal sources such as social media as
38
39 629 their main informants, similarly to recent quantitative research in Italian students(64).

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41 630 However, these sources of ED information are likely to be damaging and inaccurate(65,66).

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43 631 Students in a previous Australian study highlighted a desire for greater ED teaching in
44
45 632 schools(54), a sentiment similarly expressed by participants of this study, many of whom
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47
48 633 perceived their ED teaching as inadequate.

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50 634

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52
53 635 Previous research in members of the public showed significantly poorer MHL in male
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55 636 participants(60). Contrary to this, differences in the ED-MHL between the male and female
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58 637 participants of this study was not significantly apparent. However, there were some
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3 638 disparities. Male participants were more likely to perceive themselves to have low levels of
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5 639 knowledge and appeared more reluctant to seek social support, making more reference to
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7
8 640 perceived social stigma, such as being perceived differently by their peers.
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10 641

13 642 **Strengths and limitations**

15 643 To the best of the authors' knowledge, this study is the first in-depth, qualitative exploration
16
17 644 of knowledge and understanding of EDs in UK university students. This is a major strength of
18
19
20 645 the research as the interviews enabled broad exploration of knowledge and enable further
21
22 646 insight into individual perceptions of EDs and beliefs about stigma and treatment barriers in
23
24 647 a highly specific, at-risk population. The use of member validation and analyst triangulation
25
26
27 648 with an experienced qualitative researcher further strengthens the study. Data saturation
28
29 649 was reached with 14 participants which reflects recommended sample sizes in a study of this
30
31
32 650 type(67).

34 651

37 652 However, there are a number of limitations. The study was advertised as looking at EDs,
38
39 653 therefore participants could have volunteered because they had a greater interest or
40
41 654 perceived themselves to have greater ED knowledge. Furthermore, some participants may
42
43 655 have been reluctant to disclose their true views about EDs due to social desirability bias(68),
44
45 656 and may have held more stigmatising viewpoints than was apparent from interviews.
46
47 657 Participants' lack of awareness in certain areas may reflect this bias and therefore they may
48
49 658 have been reluctant to discuss answers they knew may have been rooted in stereotypical
50
51
52 659 assumptions. Methods to minimise the impact of social desirability bias, such as self-
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54 660 administered questionnaires may be beneficial for future research(69).
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3 **662 Research and policy recommendations**
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6 663 This study, alongside others, highlights there are poor levels of ED knowledge in this
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8 664 population in certain areas, including symptom recognition and awareness of treatment
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10 665 options. Further research in this at-risk population using vignette studies may be beneficial
11
12
13 666 to draw further inferences about individual perceptions about EDs.
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18 668 Furthermore, this study also emphasised a desire from participants for greater ED teaching.

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20 669 Therefore, ED educational campaigns within schools or universities would be crucial to
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22
23 670 improving awareness of symptoms and treatments and may encourage earlier help-seeking
24
25 671 and improve treatment uptake in this at-risk group. Additionally, university, school and
26
27 672 college welfare services need to be suitably prepared to support individuals with EDs.
28
29 673 Improving ED education in university and school staff, through courses such as Beat's
30
31 674 'bridging the gap', can increase early detection of EDs and ensure individuals with EDs are
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35 675 given the support they need(70).
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40 677 Despite anti-stigma campaigns such as Beat's 'eating disorder awareness week'(71),
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42 678 participants still perceived EDs as stigmatised within the community. There is a need for
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44
45 679 research into the efficacy of ED anti-stigma campaigns to determine which methods work,
46
47 680 allowing for more successful future campaigns. Findings from a small-scale trial suggest the
48
49 681 delivery of information emphasising the biological basis of EDs can help reduce stigmatising
50
51 682 attitudes towards EDs(72), hence further research into provision of this information would
52
53 683 be beneficial. There is also a need for research involving participants of different educational
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56 684 levels and ages. This would be more indicative of public knowledge and understanding and
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58
59 685 would help inform educational and anti-stigma campaigns targeted at a broader audience.
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3 686 The perception of EDs as a 'female issue' is still a major problem, and therefore anti-stigma
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6 687 campaigns targeted at males may be useful to address the sex-specific stigma associated
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8 688 with EDs and improve symptom recognition and help-seeking in men.
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11 12 13 690 **Conclusions**

14
15 691 This study demonstrates the gaps in knowledge and perceived stigma surrounding EDs in a
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17 692 group of UK university students. There is a need for health campaigns targeted at at-risk,
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19 693 younger individuals to better educate them about EDs, including information about
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21 694 symptoms and treatment options to better aid recognition and improve help-seeking, with
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23 695 the hope of lowering the significant treatment gap apparent in these conditions. Further
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25 696 research is necessary to better determine the ED-MHL of the general public and to develop
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27 697 effective methods of tackling the stigma surrounding EDs and other mental health
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29 698 conditions.
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3 710 **Declarations**
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6 711 **Ethics statement:** Ethical approval was granted by the BMedSc Population Sciences and
7
8 712 Humanities Internal Ethics Review Committee at the University of Birmingham, Reference:
9
10 713 IREC2019/Student 1638594. All methods were performed in accordance with the
11
12 714 appropriate guidelines and regulations. Written informed consent was obtained from all
13
14 715 participants.
15
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19
20 717 **Consent for publication:** All participants provided written, informed consent. All data is de-
21
22 718 identified within the report.
23
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26 719

27 720 **Availability of data and materials:** The datasets generated and/or analysed during the
28
29 721 current study are not publicly available due to the qualitative nature of the research.
30
31 722 However, they are available from the corresponding author on reasonable request.
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36 724 **Competing interests:** None declared.
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41 726 **Funding:** Not applicable
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45 727

46 728 **Author contributions:** MM designed the study, wrote the study protocol, obtained ethical
47
48 729 approval, undertook recruitment, carried out interviews, analysed the data and produced
49
50 730 the final manuscript. SG provided expert supervision and contributed to the study design,
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52 731 protocol and analysis.
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8 735 have been possible.
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For peer review only

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8 967 **Supplementary information**
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13 969 ***Supplementary information 1***
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15 970 **File name:** S1 – Interview guide
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18 971 **File format:** .docx
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20 972 **Title of data:** Interview guide
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23 973 **Description of data:** Participant interviews were centred around the interview guide which
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25 974 covered key areas of mental health literacy including help-seeking, stigma and the
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27 975 knowledge of ED symptoms, causes and treatments.
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32 977 ***Supplementary information 2***
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35 978 **File name:** S2 – COREQ checklist
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37 979 **File format:** .docx
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40 980 **Title of data:** COREQ checklist
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42 981 **Description of data:** Evidence that this qualitative study has been reported in accordance
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44 982 with the COREQ criteria.
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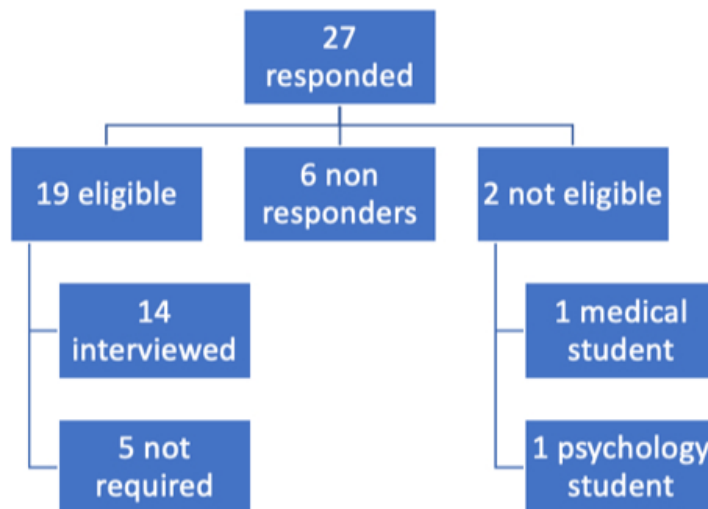


Fig 1: Participant characteristics

54x39mm (300 x 300 DPI)

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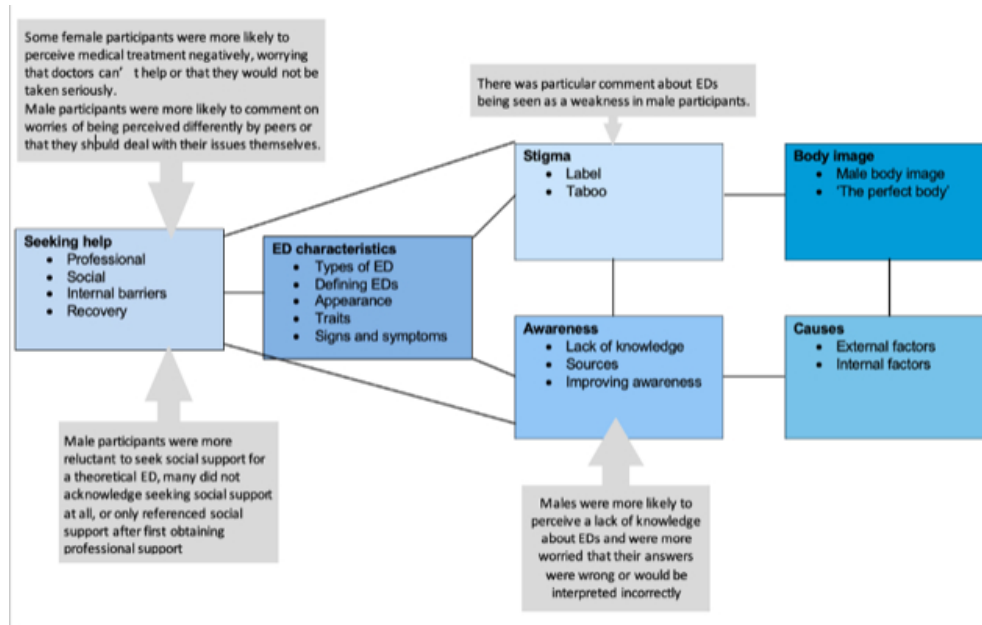


Fig 2: Links between themes and impact of biological sex

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

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3 Supplementary information 2: COREQ checklist
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5	6	7	8
Research item	Guide question/description	Result and location in manuscript (section, page number)	
8 Domain 1: Research team and reflexivity			
9 <i>Personal characteristics</i>			
10 1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	MM (data collection, page 7)	
12 2. Credentials	What were the researcher's credentials e.g. PhD, MD	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)	
14 3. Occupation	What was their occupation at the time of the study?	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)	
17 4. Gender	Was the researcher male or female?	Female (data collection, page 7)	
18 5. Experience and training	What experience or training did the researcher have?	Degree content included study of qualitative research methods (data collection, page 7)	
20 <i>Relationship with participants</i>			
22 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)	
24 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)	
32 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)	
38 Domain 2: Study design			
39 <i>Theoretical framework</i>			
41 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)	
46 <i>Participant selection</i>			
48 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)	
51 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)	
57 12. Sample size	How many participants were in the study?	Fourteen (results, page 9)	

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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)
<i>Setting</i>		
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)
<i>Data collection</i>		
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		
<i>Data analysis</i>		
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)
<i>Reporting</i>		

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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)

For peer review only

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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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4 1 **Abstract**

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6 2 **Background:** Eating disorders (EDs) affect 1.25 million people in the UK. Evidence suggests
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8
9 3 the public display stigma and poor mental health literacy (MHL) towards EDs. There is a high
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11 4 prevalence of EDs in university populations, so it is important to determine the MHL of this
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14 5 at-risk group. Qualitative research exploring the MHL of this population is incomplete.
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20 7 **Objective:** Explore university students' beliefs and opinions of EDs, their knowledge of
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22 8 symptoms, treatment and help sources and how these are influenced by biological sex.
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28 10 **Design:** A qualitative study, using semi-structured interviews analysed using inductive
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30 11 thematic analysis.
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36 13 **Setting:** The University of Birmingham.
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42 15 **Participants:** Seven female and seven male University of Birmingham students.
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48 17 **Results:** Analysis revealed six themes, each with subthemes: ED characteristics, causes, body
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50 18 image, seeking help, stigma and awareness. Students displayed poor awareness towards ED
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52 19 signs and symptoms, causes and help sources. Students were not stigmatising towards EDs,
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54 20 but many perceived them as a female problem and believed society to be stigmatising.
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58 21 Many referenced informal sources of information such as social media and expressed a
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3 22 desire for ED teaching. Sex did not have a significant influence on knowledge or opinions of
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6 23 EDs in this study, however there were some differences, for example some males were more
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8 24 likely to see EDs as a weakness and to perceive themselves as having low levels of
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10 25 knowledge.

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16 27 **Conclusions:** University students show broad awareness of EDs however knowledge of
17
18 28 certain aspects of ED-MHL including help sources and symptom recognition was lacking.
19
20 29 Although students were not stigmatising of EDs themselves, many perceived high levels of
21
22 30 public stigma. This, alongside poor knowledge, may delay help-seeking. Campaigns
23
24 31 educating students and the public about EDs would aid earlier diagnosis, improving long-
25
26 32 term outcomes. Further research into awareness and knowledge in other populations would
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28 33 be beneficial.

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34 35 **Keywords:** Eating disorder, qualitative research, mental health literacy, social stigma,
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36 36 students, attitudes, health knowledge, opinions.

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3 44 **Article summary: Strengths and limitations of this study**
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- 6 45 • First qualitative exploration of knowledge and understanding of eating disorders in
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8 46 UK university students.
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11 47 • Qualitative methodology allowed broad exploration and insight about perceptions of
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13 48 eating disorders in this at-risk population.
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16 49 • Member validation and analyst triangulation with an experienced qualitative
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18 50 researcher strengthen the methodology.
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21 51 • Some participants may have been hesitant to disclose their true views due to social
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23 52 desirability bias.
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26 53 • Study was advertised as research about eating disorders, so participants could have
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28 54 volunteered because they have an interest and therefore more knowledge about
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31 55 eating disorders.
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65 Introduction

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

72
73 Notwithstanding the significant mortality and morbidity associated with EDs, statistics show
74 it takes individuals an average of 91 weeks to realise they have an ED, on top of the 58
75 weeks they typically wait before presenting to their doctor(7). Recent data suggests a
76 shorter duration of untreated eating disorder is associated with increased likelihood of
77 remission(8). However, fewer than 20% of individuals who screen positive for an ED go on to
78 receive treatment(9,10), highlighting a significant treatment gap, and leaving individuals
79 vulnerable to suffering debilitating long-term outcomes.

80
81 This delay in health seeking is postulated to be due, in part, to poor mental health literacy
82 (MHL) and the fear of stigma attached to EDs(11). MHL refers to an individual's 'knowledge
83 and beliefs about mental disorders that aid the recognition, management or prevention of
84 these disorders'(12). Studies show members of the public attribute EDs to personal
85 shortcomings and perceive ED sufferers as vain and self-obsessed(13,14). This can result in
86 high levels of self-stigma, whereby an ED sufferer turns public stigma towards
87 themselves(15), lowering self-worth and self-efficacy, and further delaying help-seeking(16).

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6 89 The ability to recognise ED behaviours has been shown to be a significant factor in
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8 90 improving early-intervention and help-seeking(17). Furthermore, an ED sufferer's social
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10 91 network has been shown to be fundamental in improving ED identification and encouraging
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12 92 treatment-seeking(18).
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19 94 However, research indicates the public display poor MHL towards various mental
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21 95 illnesses(19), including EDs(20,21), suggesting the ability of the public to recognise an ED in
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23 96 themselves or in others is sub-optimal. In addition, eating disorder mental health literacy
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25 97 (ED-MHL) appears less systematically investigated than MHL relating to other mental
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27 98 illnesses, and therefore research in this area lacks the ability to inform relevant health
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29 99 promotion and early intervention programmes that seek to reduce the burden of these
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31 100 conditions(22,23).
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39 102 In the UK, the highest incidence of EDs occurs in girls between 15 and 19 years of age(24),
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41 103 with symptom duration often lasting 5-8 years(2). Unsurprisingly, there is a high prevalence
42
43 104 of EDs in university populations(25), where normalisation of ED behaviours such as
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45 105 restrictive dietary intake and overexercising alongside a loss of external accountability can
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47 106 exacerbate symptoms and lead to the development of new, unhealthy food behaviours(26).
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49 107 Furthermore, in a survey of UK university students by the ED charity Beat, 32% of students
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51 108 with an ED were diagnosed at university, however 69% reported difficulties accessing
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53 109 treatment(27).
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3 111 Literature suggests that men constitute at least 25% of UK ED cases(28). However, research
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6 112 indicates the public expectation that EDs are primarily a female issue limits young men's
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8 113 ability to recognise their symptoms and delays them from seeking appropriate help(29,30).
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11 114 Sex bias is also indicated, with studies indicating that men hold more negative attitudes
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13 115 towards EDs(31,32) and have generally poorer MHL than females(20).
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19 117 The majority of previous studies into ED-MHL have been quantitative, and have taken place
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21 118 outside of the UK, where different cultural norms, health systems and mental health
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23 119 education may mean results are not necessarily transferrable to the UK(33). Although useful
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25 120 for determining the general scope of ED knowledge and associated stigma, the pre-prepared
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27 121 questions in such studies do not allow for volunteering of further opinions not expressed in
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29 122 the questionnaires. Additionally, it does not allow in-depth exploration of individual beliefs
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31 123 and attitudes.
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39 125 Therefore, there is a need for extensive qualitative research to be carried out in this area.
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41 126 Yet, existing UK qualitative literature into ED-MHL is lacking, only seeking responses from
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43 127 females(34), meaning difference in responses between males and females cannot be
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45 128 inferred. Some qualitative literature exists from other countries, but this literature is also
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47 129 incomplete, focussing only on ED causes(21), or solely on AN(35). Furthermore, none of
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49 130 these studies concentrated on at-risk populations such as university students.
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57 132 Research focussed on university students, to determine if differences in understanding and
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59 133 opinions of EDs exist between these at-risk young males and females can give an insight into
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3 134 the ED-MHL of this population, identifying areas where greater education is needed to
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6 135 improve help-seeking and reduce stigma. This paper reports on a qualitative interview study
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8 136 which aimed to determine university students' ED-MHL, exploring beliefs and opinions of
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10 137 EDs and their knowledge of ED symptoms, treatment and sources of help. It also sought to
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13 138 determine the impact of sex on ED perceptions and knowledge.
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19 140 **Materials and methods**

22 141 ***Participants***

25 142 Participants were recruited from a convenience sample of English speaking University of
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27 143 Birmingham students(36), chosen purposively to ensure equal numbers of male and female
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29 144 participants were recruited(37). To investigate lay perceptions of EDs, students with a
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32 145 previous formal diagnosis of an ED were excluded, alongside students studying a healthcare
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34 146 degree or psychology, as they were assumed to have greater ED knowledge than other
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37 147 university students(38). To focus on UK perceptions, international students and international
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39 148 exchange students were also excluded.
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45 150 ***Recruitment***

48 151 Participants were recruited via advertisements placed around the university campus and
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50 152 posted on a University of Birmingham Facebook group(39).
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56 154 Participants who responded were emailed a participant information sheet and eligibility
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59 155 questionnaire to enable purposive sampling based on sex, and ensure any non-eligible
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3 156 individuals were excluded, for example those who had previously been diagnosed with an
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6 157 ED(37).
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9 158 Participant recruitment continued until data saturation was reached (Fig 1).
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14 160 **Fig 1: Participant recruitment process**

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17 161 **Fig 1 legend:** Individuals who responded contacted the researcher to enquire about the
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19 162 study. Non responders either did not return the eligibility questionnaire or did not confirm
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21 163 interest in the study. Five participants were not required as data saturation was reached.
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28 165 ***Data collection***

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30 166 Data was collected using face to face, semi-structured, audio-recorded interviews(40). These
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33 167 took place in a private room in the University of Birmingham library during January and
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35 168 February 2020. No repeat interviews were undertaken. Written, informed consent was
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37 169 obtained from each participant prior to their interview.
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44 171 All interviews were carried out by MM, a female, white British medical student intercalating
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46 172 in psychological medicine. Interview duration ranged between 20 and 37 minutes, with a
47
48 173 mean of 28 minutes. The researcher did not know any participant prior to study initiation,
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51 174 and all were aware of the interviewer's demographics as outlined in the participant
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53 175 information sheet, prior to their interview. Upon interview completion, each participant
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55 176 received a £15 Amazon voucher to thank them for their time.
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3 178 An interview guide (supplementary file 1) of open-ended questions informed by relevant
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5 179 literature(34,41,42) was used to explore key areas of MHL(43), including knowledge of ED
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8 180 symptoms, causes, characteristics, treatments and recovery, and personal help seeking
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10 181 behaviours (see supplementary file 1 for specific questions relating to these areas). These
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12 182 topics were chosen to reflect a broad overview of ED-MHL, to ensure participants were able
13
14 183 to share their full knowledge and perceptions they have of EDs, ensuring the research
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16 184 question was answered. The interview guide ensured consistency across interviews and was
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18 185 piloted on participants known to the researcher who met the eligibility criteria to ensure
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20 186 questions were accessible to participants. Pilot data was not included in the study.
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188 **Data analysis**

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

193

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

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6 202 To enhance the quality of the analytic process, investigator triangulation occurred(49). Two
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9 203 transcripts were coded independently by SG, an experienced qualitative researcher. MM
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11 204 and SG then met to discuss analysis and agree on themes, before meeting again to further
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14 205 refine and define themes. Furthermore, to ensure credibility of results, member validation
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16 206 occurred. Participants were sent their interview's main themes asked to confirm these
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19 207 reflected the intent of their responses. 11 participants responded confirming this was an
20
21 208 accurate representation of their views(50). Data is reported in accordance with the
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24 209 consolidated criteria for reporting qualitative research (COREQ) checklist(51).

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28 29 211 ***Patient and public involvement***

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32 212 Patients and members of the public were not involved in study design or development.
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35 213 Participants were involved in study analysis through member validation.

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39 40 215 **Results**

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43 216 Seven male and seven female participants took part in the study, their characteristics are
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46 217 described in table 1. 86% were White British ethnicity, and the ages of participants ranged
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49 218 from 18 to 26 years old. Participants studied a wide range of university courses, with the
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51 219 majority reading either the arts and law or social sciences.

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55 56 221 **Table 1: Participant characteristics**

		Participant														N	
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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	

222 **Table 1 legend:** Participant age ranged from 18-26. Equal numbers of male and female
 223 participants took part in the study and 86% of participants were of white British ethnicity.
 224 Participants studied a range of university courses, including arts and law and social sciences.
 225
 226 Six themes, each with subthemes, were interpreted from the data: ED characteristics,
 227 causes, body image, seeking help, stigma and awareness. Themes represent central
 228 attitudes and ideas discussed throughout interviews. Some reflect areas of the interview
 229 guide, however others, such as stigma, were mentioned by participants without directly
 230 being led by the interview guide. Fig 2 summarises the links between themes and the impact
 231 of sex on results.
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3 **233 Fig 2: Links between themes and impact of biological sex**
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5 **234 Fig 2 legend:** Each box contains one theme and associated subthemes. Links between
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8 235 themes are represented by a black line.
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14 237 Themes are displayed with supporting quotations, presented with biological sex specific
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16 238 pseudonyms to maintain confidentiality. Superfluous text within quotations has been
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19 239 removed and is represented by an ellipsis [...].
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25 241 ED characteristics

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27 242 ***Types of ED***

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30 243 All participants mentioned AN, and most were able to attempt a definition. Many
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33 244 participants also cited over-eating as an ED, however only three specifically defined binge
34
35 245 eating disorder. Though 12 participants were able to name bulimia nervosa (BN), many were
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38 246 hesitant to define and describe it:
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43
44 248 'I think most people have some kind of idea of what anorexia is, bulimia, I think it's
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46 249 more complicated' (David, 21)
47

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51
52 251 ***Defining EDs***

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54
55 252 Many participants believed EDs to be a psychological issue and defined them as a mental
56
57 253 illness. Furthermore, EDs were frequently recognised as a spectrum, a scale between
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59
60 254 disordered eating and a severe ED:

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'I think they're almost like a spectrum, I think some people have a really bad eating

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disorder and it affects them in a really bad way but I think a lot of people can have

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11 258

unhealthy relationships with food that but they stay at a sort of stable weight but it's

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more of the mental thoughts they have about it' (Chelsea, 22)

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16 260
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1819 261 ***Appearance***20
21
22 262 12 participants perceived EDs as a predominantly female problem, with few mentioning EDs23
24 263 in men. They were also frequently associated with younger people, believed to affect those25
26
27 264 of school and university age:28
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33 266 'Younger women are the main category, so teenagers to like early mid-twenties I'd

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35 267 say, so that captures students' (Rebecca, 21)36
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41 269 'If I see a guy and he's skinny [...] I don't think there's any chance of it being an eating

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43
44 270 disorder, he's just skinny' (David, 21)45
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49

50 272 The perception that individuals with EDs are 'skinny' or 'skeletal' was held by 13

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52 273 participants, and many described the impact of EDs as severe, believing sufferers to appear53
54 274 'ill-looking' and 'gaunt':55
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3 276 'So skinny that you can see their hip bones protruding, knee bones look massive in
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6 277 comparison to the rest of their leg because they're so big and like clothes hanging off
7
8 278 them' (Katie, 19)
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14 280 ***Traits***

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16
17 281 *Vulnerable*

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20 282 Whilst the majority of participants recognised EDs as challenging and impactful, some male
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22 283 participants were more likely to associate EDs with vulnerability, perceiving sufferers as
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24
25 284 'fragile':

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30 286 'I'd see them as more fragile I think, I'd see them more [...] like a vase' (William, 19)

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36 288 *Obsessive*

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39 289 There was the view that individuals with EDs are obsessive and seeking perfection, with two
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41
42 290 students commenting on a 'type A' personality putting someone at increased risk of an ED
43
44 291 (52):

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46
47 292

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49
50 293 'If you're quite neurotic so you're a bit strung, highly strung up maybe they're a

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52 294 perfectionist or someone really has to be yeah really controlling about things in life'

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55 295 (Callum, 26)

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3 297 Control was mentioned by five participants, four of whom were female. EDs were seen as a
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6 298 coping mechanism, by which individuals can take control of aspects of their lives:
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11 300 'They get some sort of, I wouldn't say enjoyment but satisfaction with having the
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13 301 control of food especially if they don't have the control of anything else' (Katie, 19)

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20 303 *Image conscious*

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23 304 Seven students believed ED sufferers hold a low self-worth, perceiving them to care a lot
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25 305 about their own image and what others thought of them:
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31 307 'Lack of confidence as a trait would also make you a lot more sort of conscious of
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33 308 how you're seen' (Shaun, 19)
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39 310 ***Signs and symptoms***

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42 311 Perceived signs and symptoms freely volunteered by participants are presented in table 2.

43
44 312 Students were generally unaware of specific ED symptoms and which symptoms were
45
46 313 associated with specific EDs. Some symptoms were recognised more than others, specifically
47
48 314 under-eating and over-eating. Vomiting and binge eating and purging were also frequently
49
50 315 mentioned, and all participants that recognised these symptoms associated them with BN.
51
52 316 Despite seven participants describing EDs as visible illnesses with numerous physical signs,
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54 317 many perceived difficulties in recognising signs and symptoms, describing EDs as conditions
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56 318 that are not easy to spot:
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320 'It's not really as apparent, we don't see people naked or in their underwear every

321 day, you just assume someone's fine' (Danielle, 21)

322

323 **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)

324 **Table 2 legend:** Table 2 shows perceived signs and symptoms of EDs alongside frequency

325 stated by participants and a supporting quotation.

326

327 Causes of EDs

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

333

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

335

336 **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)

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

339

340 Body image

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

344

345 'I think it affects lots of people, like sort of body dysmorphia in general, I think like in
 346 some kind of mild forms' (Adam, 21)

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56 348 ***'The perfect body'***
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9 349 'The perfect body' was something that had been repeatedly presented to many participants
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11 350 from a young age, with individuals with this body type deemed more attractive to society
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13
14 351 and the opposite sex:
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20 353 'If you don't look like that, or you're not like aiming to look like that [...] then you're
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22 354 unhealthy or you're not good enough or you're not attractive [...] because you have
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25 355 to fit into like one of the groups, one of the standards presented' (Grace, 22)
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31 357 All students cited media pressure as a cause of poor body image, with many reflecting on
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33 358 increased pressure due to the rise in social media, resulting in a constant comparison of
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36 359 oneself against others:
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42 361 'Because of social media, you're always comparing yourself to other people, I think
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44 362 people feel more in competition with other people all the time [...] I don't think it's
45
46 363 healthy on body image' (Rebecca, 21)
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52 365 Many students believed females to be under greater pressure, citing increased female body
53
54 366 representation in the media and sexist viewpoints towards female bodies as mechanisms for
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57 367 this. Ten participants referred to the 'female ideal' of being slim:
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3 369 'What you'd see in something like London fashion week, tall skinny models that
4
5 370 would have potentially a thigh gap, a flat stomach, no stretch marks, not much
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8 371 cellulite' (Katie, 19)
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14 373 Contrastingly, the 'male ideal' was described as heavily muscular:
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20 375 'A six pack, like well-toned, just a good size of muscles like all over' (Andrew, 19)
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26 377 **Male body image**

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28 378 Despite acknowledging that males also experience pressure to look a certain way, students
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30 379 generally inferred that males care less about image and are not bothered about how other
31
32 380 people perceived them. This was supported by male participants being more likely to
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34 381 comment that body image worries did not personally affect them:
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42 383 'Myself I'm not too bothered, but men in general if I had to be very stereotypical, I
43
44 384 would say men don't care as much about their image' (Joshua, 20)
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50 386 Various students commented on the societal stigma they believe exists around men's
51
52 387 bodies, with male body image viewed as less inclusive and spoken about than female body
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54 388 image. Due to this, some participants commented that many males do not talk about their
55
56 389 bodies:
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6 391 'The stereotype of not showing weakness may mean that they're less willing to open7
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9 392 up' (Shaun, 19)10
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14 394 Seeking help15
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17 395 With prompting, 12 participants were able to suggest some sources of professional help18
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20 396 available to support those with EDs. Seven participants recognised the importance of21
22 397 seeking social support. Many students commented on potential treatment barriers,23
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25 398 including perceived negatives of medical treatment and worries about self-image.26
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28 39929
30
31 400 **Professional**32
33
34 401 Twelve participants recognised therapy as a potential treatment. Further sources of formal35
36 402 treatment included treatment in specialist hospitals and nasogastric feeding. Many37
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39 403 participants, especially females, commented on issues with seeking medical treatment,40
41 404 including perceived lack of treatment availability and the belief that doctors would not take42
43 405 EDs seriously:44
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46 40647
48
49 407 'With the NHS they have so much on their plate and there's underfunding and stuff50
51
52 408 so I just personally wouldn't want to go there for them. And as well GPs can be a bit53
54 409 snappy and try and like rush you and stuff' (Chelsea, 22)55
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3 411 Ten participants said they would be willing to seek professional help, the majority
4
5
6 412 mentioned consulting their GP or seeking a therapist. Male participants were more likely to
7
8 413 seek only professional support or seek social support after first pursuing professional
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10 414 support. Furthermore, some mentioned first researching online about what help was
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12
13 415 available for EDs:
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18
19 417 'Probably look on NHS website first I'm sure they'd probably say go to a doctor and
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21 418 then I'd probably get a referral from the doctor' (Callum, 26)
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26
27 420 **Social**
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30 421 The majority perceived social support as vital in both recovery and maintaining recovery.
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32 422 Five participants mentioned greater willingness to seek social rather than professional
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34 423 support, highlighting the ability of the social network to encourage help-seeking:
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41 425 'I'd probably ask for someone's advice on whether I should go to the doctor' (Grace,
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43 426 22)
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49 428 Despite perceived benefits of seeking social support, many commented on potential barriers
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51 429 that would prevent them from seeking social support, including not wanting to bother
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53 430 others with their problems and a fear of being judged. All male participants worried about
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55 431 being perceived differently by peers:
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3 433 'If I suspected one of my friends of having an eating disorder I'd see them as fragile
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6 434 and delicate, I wouldn't want the people close to me to see me as fragile and delicate
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8 435 cos I wouldn't want people's opinions to change about me' (William, 19)
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11 436
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13
14 437 The desire to help those with an ED was emphasised by 13 participants, however six
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16 438 participants recognised that helping someone with an ED was often difficult. Participants
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19 439 were generally sympathetic, suggesting a need to be supportive and encourage those
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21 440 suffering to seek professional support:
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27 442 'I'd encourage them, and if they were like I want to get medical help I'd like come
28
29 443 with them' (Thomas, 18)
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32 444
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34
35 445 Notwithstanding the support offered, many participants predicated a subconscious change
36
37 446 in behaviour that would come with knowing someone had an ED. Nine participants
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39
40 447 mentioned a need to act carefully around those with EDs, particularly in situations involving
41
42 448 food. Five participants also recognised the need to maintain a sense of normality:
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46 449
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48
49 450 'I'd want to be a lot more careful with how I acted around them but then again whilst
50
51 451 I'd be a lot more careful I'd also very much try to act that nothing has changed, so
52
53 452 around them I'd try and act exactly the same' (William, 19)
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59 454 ***Internal barriers***
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3 455 The extent that personal beliefs and coping mechanisms limited help-seeking was also
4
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6 456 discussed. Seven participants highlighted the struggles that come with seeking help,
7
8 457 perceiving EDs as difficult to discuss, and help-seeking as embarrassing and scary:
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14 459 'I can imagine that would be a really hard conversation, to say like mate I think you
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16 460 might have an eating disorder, I wouldn't want to hear that, I don't think anyone
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18 461 would want to hear that' (Thomas, 18)
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24
25 463 The internalisation of one's problems was mentioned by three participants. This came hand
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27 464 in hand with a perception that EDs are not a serious issue, and therefore something that
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29 465 could be easily dealt with by oneself. Furthermore, many participants held the belief that
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31 466 individuals with EDs may not want to recover, or may lack the intuition to realise they have a
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33 467 problem:
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40 469 'I imagine some people just don't even know that they, it's a problem for themselves
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42 470 and they could be putting themselves at risk' (Grace, 22)
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46 471

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48
49 472 **Recovery**

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51
52 473 Eleven participants believed it was possible to recover from an ED. Despite this, participants
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54 474 made frequent reference to the idea that the ED would remain with you, and that it would
55
56 475 be easy to relapse. Ten participants commented on the ease of falling back into previous
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58 476 behaviours or thoughts:
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6 478 'I think it would be difficult for them to never have them same thoughts in their head
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8 479 again. So, I think the thoughts will always be there it just depends, they can probably
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11 480 learn to live with it rather than them let it take over their life' (Chelsea, 22)
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14 481
1516
17 482 Stigma
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20 483 The majority of participants recognised EDs, and mental health conditions in general, as
21
22 484 highly publicly stigmatised.
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2728 486 **Label**
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31 487 Some participants commented on the impact of EDs on image. Five students perceived EDs
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33 488 as conditions that are shamed within society, commenting that society has a tendency to
34
35 489 label people with mental health issues:
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42 491 'I wouldn't want it to be perceived as a part of my identity, I wouldn't want to be
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44 492 known as the boy with an eating disorder rather than anything else about me, I
45
46 493 wouldn't want that to be what people sort of defined me as' (Shaun, 19)
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50 494
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53 495 EDs being seen as a 'weakness' was mainly specified by male participants, with three
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55 496 participants stating this as a reason they would not tell anyone they had an ED:
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3 498 'I think I'd find it hard to tell my friends about it as well, like show weakness rather
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5
6 499 than just coming across as someone who's laid back and calm' (Shaun, 19)
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11 501 **Taboo**

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14 502 A number of students saw EDs as conditions that are rarely discussed by society. Many held
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16
17 503 the perception that mental illnesses were 'taboo'. Additionally, six students commented on
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20 504 EDs being poorly understood within the community, seeing society as ignorant towards the
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22 505 seriousness of the conditions:
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28 507 'I feel like for a long time it wasn't really recognised and therefore people didn't, if
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30 508 you had an eating disorder it was sort of why are you be being difficult rather than
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32
33 509 being like oh let's work, let's find a way to work around this' (Andrew, 19)
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37
38 511 In addition, a number of students saw EDs as conditions that were 'difficult to relate to',
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40
41 512 citing this as a reason why many find it hard to understand EDs:
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46
47 514 'If someone's feeling anxious they can talk to their friends about it, there'd be some
48
49 515 level of empathy and them understanding that, I think it would be much harder to
50
51
52 516 talk to a friend and expect them to, well have them understand an eating disorder,
53
54 517 because it's not a shared thing' (David, 21)
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57 518

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59
60 519 Awareness

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3 520 Throughout the interviews there was a general hesitancy and lack of awareness when
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6 521 discussing certain aspects of EDs.
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11 523 ***Lack of knowledge***
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14 524 Ten participants, the majority of whom were male, perceived themselves to have poor
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16
17 525 knowledge about certain aspects of EDs. Many were hesitant to answer, and lacked
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19 526 confidence in their answers:
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25 528 'I don't know a huge amount, so I definitely don't have great knowledge on it'

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27 529 (Callum, 26)
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33 531 Furthermore, many participants stated their knowledge as 'assumptions' or 'clichés', with
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36 532 male participants particularly worried that their answers were incorrect or would be
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38 533 interpreted improperly:
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44 535 'I don't want my opinions to come across like I know what I'm talking about almost, if

45
46 536 you know what I mean' (Joshua, 20)
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52 538 ***Sources***
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3 539 Nine participants mentioned knowing an ED sufferer, evidencing the frequently held
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5
6 540 perception that EDs are common. Many cited experiences of these individuals as sources of
7
8 541 their knowledge, particularly around treatment and symptoms:
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11 542

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13
14 543 'I think now they're quite common, I feel like everyone knows someone who's
15
16 544 struggled with an eating disorder' (Rebecca, 21)

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21
22 546 Six participants mentioned being formally taught about EDs in school, however many
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24 547 reflected that these lessons were 'basic' and were unable to recollect what specifics they
25
26 548 had been taught:
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32
33 550 'We had like the basic kind of PSHE lessons about it but nothing that could have like
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35 551 helped anyone, or not enough I don't think' (Chelsea, 22)

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41 553 The majority of participants cited informal sources such as social media and films as their
42
43 554 sources of ED knowledge:
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49 556 'A lot of what I think about eating disorders is from movies and TV shows, rather
50
51 557 than fact' (Grace, 22)

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3 559 However, some participants acknowledged that they were sceptical about the accuracy of
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5
6 560 this information. Furthermore, a number of students made comment about how the
7
8 561 representation of EDs in the media, and their perceived commonness within the younger
9
10 562 generation had made them sensitised to the signs and consequences of EDs:
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13 563

16 564 'With the lens of social media [...] when I first found out about eating disorders, at 14
17
18 565 or 15, made it seem almost, I don't want to say too ok but it almost normalised it to a
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20
21 566 point where I actually didn't realise for a little bit how serious an eating disorder was'
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23
24 567 (Thomas, 18)
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26

27 568

29
30 569 ***Improving awareness***

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33 570 Seven participants commented on the need to improve ED teaching. For many, the need to
34
35 571 educate individuals about the signs and symptoms and promote help-seeking was of
36
37 572 particular importance:
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40 573

43 574 'It flagged them up as being as issue but never really went into depth with what to do
44
45 575 about them or how to act with someone who has those and so I found that I had to
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47
48 576 learn it for myself rather than learning from like lessons and things' (Shaun, 19)
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54 578 Despite the perceived need for better teaching, a number of students commented on
55
56 579 positive steps in society that are improving ED awareness. Many commented on improving
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3 580 body representation in the media and five students commented on sources of positive ED
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6 581 representation, believing this to be beneficial to those suffering.
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11 583 'I got a lot of knowledge from social media and stuff like that, a lot of it really positive
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13
14 584 stuff, you know hashtags on twitter or stuff on Tumblr, people sharing their
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16 585 experiences and stories and it's all been from a very supportive, positive light'
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18
19 586 (Thomas, 18)
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21 587

22 23 588 **Discussion**

24 25 589 **Main findings**

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28 590 This study, to the best of the author's knowledge, is the first UK qualitative study exploring
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31 591 ED-MHL in university students. Generally, the study highlighted the university students
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33
34 592 interviewed had a broad awareness of EDs, for example a good general awareness of
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36 593 symptoms and signs and treatment options, however there were areas where knowledge
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38 594 was lacking, even in this highly educated group.
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43 596 Whilst many students were able to state AN and BN as EDs, many were hesitant to define
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46 597 and describe BN, and only a few were able to suggest further ED types. Furthermore, though
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48 598 many students were able to name some signs and symptoms when prompted, there was a
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50 599 great deal of uncertainty, and many struggled to link particular symptoms to specific EDs.
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52
53 600 The findings of this study are in keeping with a previous quantitative study of members of
54
55 601 the public, in which participants showed difficulty discriminating between ED diagnoses(53).
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57
58 602 There was no apparent difference in ED identification between sexes, in contrast to a
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3 603 previous vignette study of Canadian post-secondary students, in which males had greater
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5 604 difficulty identifying ED diagnoses(54). Awareness of ED symptoms is important, as poor
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8 605 symptom recognition is associated with reduced likelihood of help-seeking, and increased
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10 606 risk of long-term outcomes(55,56). Many students in this study perceived EDs as a female
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13 607 problem. This perception was also reported in a previous qualitative study of young people,
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15 608 who also believed AN to be a female issue(35). EDs are already considered underdiagnosed
16
17 609 in men(57), therefore this belief, in this at risk population, can result in young men being less
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19
20 610 likely to recognise their symptoms as indicative of an ED, and in them being less likely to
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22
23 611 seek help(30).

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27 613 The greatest perceived cause of EDs was media pressure. These results are similar to a
28
29 614 previous qualitative study in members of the public, in which media-ideals were a major
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31
32 615 perceived cause of EDs(21). Furthermore, many participants made reference to the 'thin-
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35 616 ideal' presented to young women in the media. This perception is common, with previous
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37 617 research in UK students highlighting how a desire for a thin, often unattainable body type is
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39
40 618 associated with ED development(58).

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44 620 Although participants in this study did not generally hold stigmatising attitudes towards EDs,
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46 621 several perceived EDs as highly stigmatised in the community. This perception is in line with
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49 622 previous studies, which have shown public attitudes towards EDs are highly conducive to
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52 623 stigma(14,59). Higher educational status is correlated with liberal views towards mental
53
54 624 illness, which may explain the low levels of stigmatisation apparent in the participants of this
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57 625 study(60). Many students cited fear of public stigma as a reason for not seeking help, further
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60 626 enhancing the idea that fear of public stigma is a major cause of delayed help-seeking(11).

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3 627 Previous studies focussed on ED stigma in university students have highlighted significant
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5 628 sex bias, with males exhibiting higher ED stigma than females(31,61). The results of this
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8 629 study are not in keeping with this literature, as differences in stigmatising viewpoints were
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10 630 not as apparent between male and female participants, though some differences were
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13 631 observed.

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18 633 Encouragingly, the majority of participants said they would seek professional help for an ED;
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20 634 however, many were unsure of what help is available, and many made comments about
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22 635 perceived negatives of professional support, such as not being taken seriously. These
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25 636 worries are in keeping with previous research(62) and could act as an explanation as to why
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27 637 those with EDs take so long to seek treatment(8). Most participants expressed sympathy and
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29
30 638 a desire to help those with an ED, and many recognised the importance of social support,
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32 639 which has been shown to be highly influential in ED recovery(63).

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37 641 Many participants perceived themselves as having poor or inaccurate knowledge. With this
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40 642 in mind, the majority of participants referenced informal sources such as social media as
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42 643 their main informants, similarly to recent quantitative research in Italian students(64).

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44 644 However, these sources of ED information are likely to be damaging and inaccurate(65,66).

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47 645 Students in a previous Australian study highlighted a desire for greater ED teaching in
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49 646 schools(54), a sentiment similarly expressed by participants of this study, many of whom
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52 647 perceived their ED teaching as inadequate.

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57 649 Previous research in members of the public showed significantly poorer MHL in male
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59 650 participants(60). Contrary to this, differences in the ED-MHL between the male and female

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3 651 participants of this study was not significantly apparent. However, there were some
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5 652 disparities. Male participants were more likely to perceive themselves to have low levels of
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8 653 knowledge and appeared more reluctant to seek social support, making more reference to
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10 654 perceived social stigma, such as being perceived differently by their peers.
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15 656 **Strengths and limitations**

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18 657 To the best of the authors' knowledge, this study is the first in-depth, qualitative exploration
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20 658 of knowledge and understanding of EDs in UK university students. This is a major strength of
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22
23 659 the research as the interviews enabled broad exploration of knowledge and enable further
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25 660 insight into individual perceptions of EDs and beliefs about stigma and treatment barriers in
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27
28 661 a highly specific, at-risk population. The use of member validation and analyst triangulation
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30 662 with an experienced qualitative researcher further strengthens the study. Data saturation
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32
33 663 was reached with 14 participants which reflects recommended sample sizes in a study of this
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35 664 type(67).
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39
40 666 However, there are a number of limitations. The study was advertised as looking at EDs,
41
42 667 therefore participants could have volunteered because they had a greater interest or
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45 668 perceived themselves to have greater ED knowledge. Furthermore, some participants may
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47 669 have been reluctant to disclose their true views about EDs due to social desirability bias(68),
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49
50 670 and may have held more stigmatising viewpoints than was apparent from interviews.

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52 671 Participants' lack of awareness in certain areas may reflect this bias and therefore they may
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54 672 have been reluctant to discuss answers they knew may have been rooted in stereotypical
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57 673 assumptions. Methods to minimise the impact of social desirability bias, such as self-
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59 674 administered questionnaires may be beneficial for future research(69).
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6 676 **Research and policy recommendations**

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8 677 This study, alongside others, highlights there are poor levels of ED knowledge in this
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10 678 population in certain areas, including symptom recognition and awareness of treatment
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13 679 options. Further research in this at-risk population using vignette studies may be beneficial
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15 680 to draw further inferences about individual perceptions about EDs.
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20 682 Furthermore, this study also emphasised a desire from participants for greater ED teaching.

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22 683 Therefore, ED educational campaigns within schools or universities would be crucial to
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24 684 improving awareness of symptoms and treatments and may encourage earlier help-seeking
25
26 685 and improve treatment uptake in this at-risk group. Additionally, university, school and
27
28 686 college welfare services need to be suitably prepared to support individuals with EDs.
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30 687 Improving ED education in university and school staff, through courses such as Beat's
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32 688 'bridging the gap', can increase early detection of EDs and ensure individuals with EDs are
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34 689 given the support they need(70).
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42 691 Despite anti-stigma campaigns such as Beat's 'eating disorder awareness week'(71),
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44 692 participants still perceived EDs as stigmatised within the community. There is a need for
45
46 693 research into the efficacy of ED anti-stigma campaigns to determine which methods work,
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48 694 allowing for more successful future campaigns. Findings from a small-scale trial suggest the
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50 695 delivery of information emphasising the biological basis of EDs can help reduce stigmatising
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52 696 attitudes towards EDs(72), hence further research into provision of this information would
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54 697 be beneficial. There is also a need for research involving participants of different educational
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56 698 levels and ages. This would be more indicative of public knowledge and understanding and
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3 699 would help inform educational and anti-stigma campaigns targeted at a broader audience.
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5 700 The perception of EDs as a 'female issue' is still a major problem, and therefore anti-stigma
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7 701 campaigns targeted at males may be useful to address the sex-specific stigma associated
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9 702 with EDs and improve symptom recognition and help-seeking in men.
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15 704 **Conclusions**
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17 705 This study demonstrates that although this group of UK university students demonstrated a
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19 706 broad general awareness of EDs, there remain areas where knowledge is lacking. There is a
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21 707 need for health campaigns targeted at at-risk, younger individuals to better educate them
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23 708 about EDs, including information about symptoms and treatment options to better aid
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25 709 recognition and improve help-seeking, with the hope of lowering the significant treatment
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27 710 gap apparent in these conditions. Further research is necessary to better determine the ED-
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29 711 MHL of the general public and to develop effective methods of tackling the stigma
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31 712 surrounding EDs and other mental health conditions.
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6 724 **Declarations**7
8 725 **Ethics approval and consent to participate:** Ethical approval was granted by the BMedSc9
10 726 Population Sciences and Humanities Internal Ethics Review Committee at the University of11
12 727 Birmingham. All methods were performed in accordance with the appropriate guidelines13
14 728 and regulations. Written informed consent was obtained from all participants.15
16 72917
18 730 **Consent for publication:** All participants provided written, informed consent. All data is de-19
20 731 identified within the report.21
22 73223
24 733 **Availability of data and materials:** The datasets generated and/or analysed during the25
26 734 current study are not publicly available due to the qualitative nature of the research.27
28 735 However, they are available from the corresponding author on reasonable request.29
30 73631
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34 73835
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44 74345
46 744 **Author contributions:** MM designed the study, wrote the study protocol, obtained ethical47
48 745 approval, undertook recruitment, carried out interviews, analysed the data and produced49
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3 746 the final manuscript. SG provided expert supervision and contributed to the study design,
4
5
6 747 protocol and analysis.
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9

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16

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20 753 qualitative study, *European Journal of Public Health*, Volume 31, Issue Supplement_3,
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22 754 October 2021, ckab165.575,
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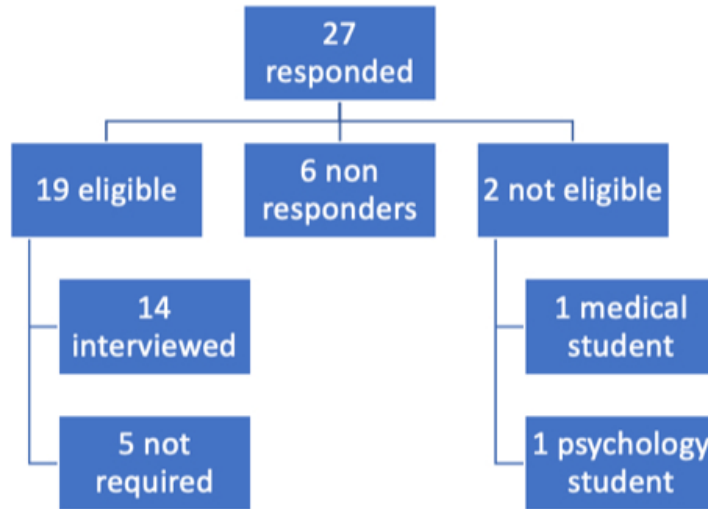


Fig 1: Participant characteristics

54x39mm (300 x 300 DPI)

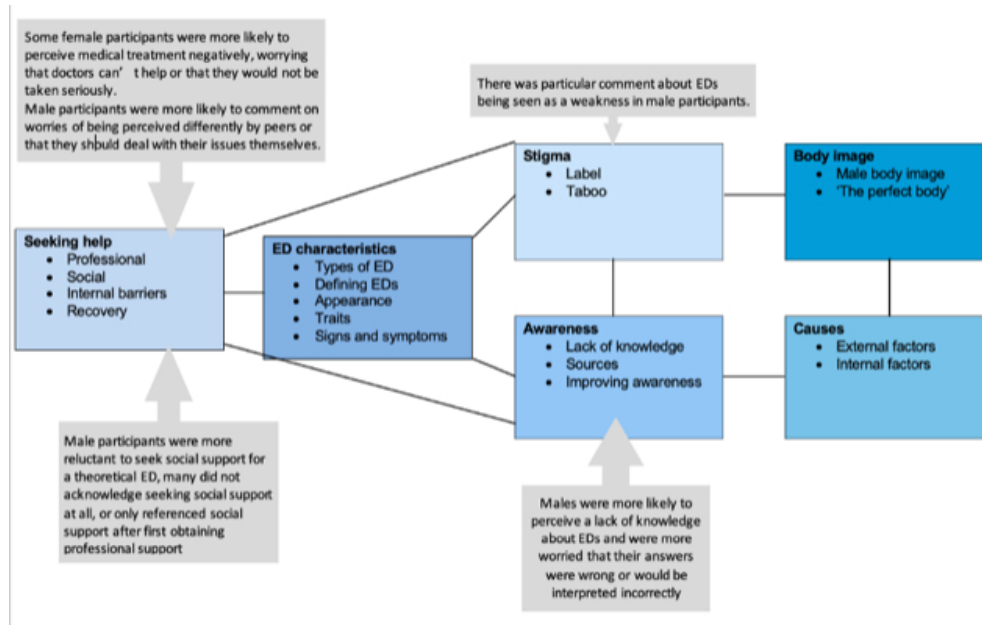


Fig 2: Links between themes and impact of biological sex

54x33mm (300 x 300 DPI)

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

Additional file 1: Interview guide

Authors:

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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

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3 Supplementary information 2: COREQ checklist
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Research item	Guide question/description	Result and location in manuscript (section, page number)	
8 Domain 1: Research team and reflexivity			
9 <i>Personal characteristics</i>			
10 1. Interviewer/facilitator	Which author/s conducted the interview or focus group?	MM (data collection, page 7)	
12 2. Credentials	What were the researcher's credentials e.g. PhD, MD	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)	
14 3. Occupation	What was their occupation at the time of the study?	Medical student studying a BMedSc in Psychological Medicine (data collection, page 7)	
17 4. Gender	Was the researcher male or female?	Female (data collection, page 7)	
18 5. Experience and training	What experience or training did the researcher have?	Degree content included study of qualitative research methods (data collection, page 7)	
20 <i>Relationship with participants</i>			
22 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)	
24 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)	
32 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)	
38 Domain 2: Study design			
39 <i>Theoretical framework</i>			
41 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)	
46 <i>Participant selection</i>			
48 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)	
51 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)	
57 12. Sample size	How many participants were in the study?	Fourteen (results, page 9)	

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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)
<i>Setting</i>		
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)
<i>Data collection</i>		
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		
<i>Data analysis</i>		
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)
<i>Reporting</i>		

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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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