

**Assessment of Knowledge and Stigmatisation towards Eating Disorders in  
Nazarbayev University Students in Kazakhstan**

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## **Abstract**

**Background:** Eating disorders (EDs) are serious psychiatric conditions that are frequently misunderstood and underdiagnosed, particularly in non-Western contexts. Despite growing evidence of the importance of early identification and intervention, the majority of eating disorder mental health literacy (ED-MHL) and stigma research assesses adolescents or clinical samples from Western countries. The aim of this study was to assess ED-MHL, endorsement of ED myths, and personal stigma among young adults at Nazarbayev University in Kazakhstan.

**Method:** There was a cross-sectional web-based survey of 121 students between the ages of 18–26 years old from non-medical university programs. Students completed three empirically validated measures: the ED-MHL questionnaire (18 factual items), the ED Myths questionnaire (11 items), and the Universal Stigma Scale (USS) measuring blame/personal responsibility and impairment/distrust. Descriptive, inferential, and correlation analysis examined associations between ED-MHL, stigma, and demographics.

**Results:** Median ED-MHL score was 10/18, indicating moderate knowledge, and higher in female students. Male students endorsed ED myths more and had greater stigma on both USS subscales. No differences were seen across academic programs. Most endorsed myths were regarding family blame and dieting norms. Correlation analysis revealed that greater ED-MHL was associated with lower endorsement of myths and lower stigma, particularly in the blame/personal responsibility dimension.

**Conclusion:** This study establishes moderate ED awareness and presence of ED-related stigma among young adults in Kazakhstan, especially among male students. Educational interventions for debunking widespread myths and stigma are crucial to enable early detection and help-seeking behaviors within university settings. Results highlight the need for culturally targeted interventions to strengthen ED-MHL and remove stigma, ultimately towards better mental health outcomes in young adult samples.

## Introduction

Eating disorders (EDs) are a heterogeneous group of severe mental health diseases, which are accompanied by specific behavioural patterns, such as destructive eating habits, abnormal perception of body and weight, as well as extreme control over shape and weight (Górski et al., 2023; Napolitano et al., 2019; Wu et al., 2017). Due to such severe ED symptoms, much research has been conducted on these disorders among mixed and non-mixed-age groups. However, these studies still lack an understanding of eating disorder-related mental health literacy (ED-MHL) and the stigma of EDs in young adults, especially those living in non-Western countries like Kazakhstan. Assessment of ED-MHL and stigma among emerging adults in university settings is significant since early intervention for those having ED symptoms demonstrates faster recovery, better management of symptoms, and increased quality of life (Bjørlykhaug et al., 2021; McGorry & Mei, 2018). Moreover, young adults who are aware of these mental disorders might encourage and support university acquaintances and friends with EDs to seek treatment earlier (Regan et al., 2017). Investigation of ED-MHL and stigma among university students, namely those from Nazarbayev University, will be valuable to fill information about knowledge of EDs and the level of stigma among young adults in Kazakhstan.

Eating disorders are divided into specific EDs, like anorexia nervosa (AN), bulimia nervosa (BN) and binge-eating disorder (BED), as well as non-specific EDs, like night-eating syndrome, bigorexia, orthorexia and pregorexia (Górski et al., 2023). In comparison to the second group, specific EDs are more common disorders and can cause detrimental physical health consequences for cardiovascular, gastrointestinal, and genital systems, as well as other comorbid mental health disorders, such as anxiety and depressive state (Mitchell & Crow, 2006, as cited by Napolitano et al., 2019; Nicula et al., 2022; Steinhausen, 2009). If such consequences from EDs progress further, they may lead to the worst and specifically high outcomes, such as suicidal behaviour and death (Crow et al., 2009; Fichter & Quadflieg, 2016). Considering such negative results from EDs, in Kazakhstan, cardiovascular diseases are one of the highest diseases in the world, and death from them contributes to 48.01% of total mortality in the country (Akhmetova & Terekhin, 2015; Sarkulova et al., 2020). Akhmetova and Terekhin (2015) state that such statistics are based on nutritional imbalances found in an urban population in Kazakhstan, who consume food with a high glycaemic index and saturated fats. Although the severity of ED symptoms and their consequences are evident, these psychiatric disorders remain misunderstood, underrated, lately diagnosed, and lately treated not only in Western countries but also in Asian countries like Kazakhstan.

Mental health literacy (MHL) is a term referring to knowledge and understanding of mental disorders, which directly influence the extent of recognition, management, and prevention of psychiatric disorders (Jorm et al., 1997). According to the definition of MHL provided by Jorm et al. (1997), the ED-MHL concept can be similarly defined through such components as the recognition of ED types and symptoms, knowledge about risks and causes of EDs, awareness of available sources for self-help and professional help, and specific attitudes enhancing detection of the signs of the disorders and help-seeking. If ED-MHL is insufficient, it becomes one of the significant barriers to help and treatment-seeking behaviour in adolescents, young adults and adults (Ali et al., 2017; Ali et al., 2020; Henderson et al., 2017; Innes, 2016). In the case of adolescents, low ED-MHL usually associates with

incomplete or wrong information about EDs and risk factors, lack of knowledge about treatment options, poor recognition of EDs in themselves and others, scepticism about professional help, and stigmatisation of EDs (Feldhege, Gulec, et al., 2022; Gratwick-Sarll et al., 2016; Napolitano et al., 2019; Rodgers et al., 2015, as cited by Feldhege, Bilic, et al., 2022). Meanwhile, poor ED-MHL in adults mostly relates to incorrect beliefs about EDs, scarce knowledge about available treatment and resources, failed recognition of the severity of EDs, negative attitudes towards professional help, and shame and dependence on opinions from others (Brenes et al., 2015; Elshaikh et al., 2023; Regan et al., 2017). All these observations are mentioned in most research about EDs that has been focused on adolescents, adults, and mixed-age groups. While findings on young adults, whose period is a key moment for the prevention and treatment of EDs, remain scarce or largely unknown in studies (Ali et al., 2017; Ali et al., 2020). From a few investigational works that exist, results reveal low ED-MHL among emerging adults and link this with scarce knowledge and misconceptions about EDs, lack of knowledge about available treatment and resources, denial and failure to recognize severity of EDs, self-sufficiency, and stigma and shame (Ali et al., 2020; Gorski et al., 2023; Lipson et al., 2017; Plateau et al., 2017; Wacker, 2018). Besides, other results regarding ED-MHL among young adults show that notably male students who do not ask for help have lack of knowledge about prevalence of EDs, hold stereotypes about who have of EDs, and show misperceptions about severity of ED symptoms (Nicula et al., 2022; Thapliyal et al., 2020). Considering the fact that research rarely involves male students and usually reports results regarding female participants, it is important to consider both sexes and compare their results of ED-MHL. Moreover, other findings investigated knowledge of students across various academic programs and showed contradicting results. One study revealed that medical students had widest knowledge in comparison to students from psychology, dentistry and dietetics, who had low level of knowledge about EDs (Gorski et al., 2023). On the other hand, another research reported that there was no correlation that dietetics students are more targeted for the development of EDs than other majors (Matusik et al., 2022). In other words, results showed that knowledge of EDs did not really differ between academic programs and thus everyone might develop abnormal attitudes towards food. Considering these findings, it is significant to look through different programs again and compare ED-MHL between them. Although these findings are valuable for further studying ED-MHL in young adults, most of them are obtained from the studies made in Western countries and cannot be simply applied to emerging adults in Asian countries. In other words, more studies on ED-MHL should be done in Asia to fill a critical scientific gap in research of EDs among young adults (Wu et al., 2017). Besides, the assessment of ED-MHL should be conducted among university students, since these individuals experience more stressful and challenging periods during their studies and frequently suffer from distress and ED symptoms (Fitzsimmons-Craft et al., 2019; Stallmann, 2010; Zhuchenko & Galiakhmetova, 2023). Also, the exact information on the extent of knowledge and attitudes towards EDs among university students will help to timely prevent EDs, recognize them early, as well as reduce stigma towards people with these disorders (Nishida-Hikiji et al., 2019).

The stigma surrounding EDs remains one of the highly prevalent barriers to help and treatment-seeking in current society (Cooper et al., 2003, as cited by Nicula et al., 2022). This kind of barrier is mentioned in all research papers and noticed in all age categories, but its types are differently displayed in adolescents, young adults, and adults. Internalized stigma, or self-stigma is internal embarrassment and shame based on secrecy of condition, devaluation of oneself, and withdrawal of their persona due to negative stereotypes (Corrigan, 1998, as cited by Elshaikh et al., 2023). According to Ali et al. (2020), this type of stigma is frequently endorsed barrier among young adults,

which makes them feel embarrassed about their problems. Moreover, self-stigma is critically important among adults to initiate help-seeking since this age category often considers that they should not need help (Brenes et al., 2015; Mackenzie & Pankratz, 2022). External stigma, or public stigma refers to fear of negative views and attitudes of society towards EDs, which consequently lead to a rise of stereotypes, prejudice and discrimination of people who have these disorders (Conner et al., 2010). Researchers highlight that the general public considers that those with EDs volitionally choose their path and end up with EDs, as well as that affected individuals should take responsibility for themselves and blame themselves for having such outcomes (Corrigan & Rüsçh, 2002, as cited by Brelet et al., 2021; Crisp, 2005; Crisp et al., 2000; Holiday et al., 2005). In addition, previous research has revealed that society displays negative attitudes like discomfort or fear and tries to avoid personal contact with people with EDs (Angermeyer & Dietrich, 2005; Corrigan et al., 2004; Hipes et al., 2016, as cited by Brelet et al., 2021). In general, this kind of stigma is observed in all age groups, thus showing that the general public presents discrimination and rejection of people with EDs despite their age. Individuals with EDs who observe such behaviour and perception from others towards people with EDs become more hesitant to seek help or treatment and can develop either perceived or self-stigma. Perceived stigma is a type of stigma that arises from an individual's beliefs about the behaviours of others towards mental disorders, such as EDs (Subu et al., 2021). For instance, adolescents report that they fear facing discrimination or stigma because of their EDs from other people and thus delay seeking professional help (Maier et al., 2014, as cited by Nicula et al., 2022). As for adults and young adults, they also have perceived stigma as they fear social judgement and stigma (Regan et al., 2017). Although these types of stigma are more prominent and frequently highlighted in studying help-seeking barriers of people with EDs, personal stigma remains less studied and mentioned in research, especially among emerging adults. According to Pedersen and Paves (2014), personal stigma refers to how someone themselves would perceive and treat others with mental illnesses, such as EDs, who seek help or treatment. Based on recent findings, personal stigma is rarely endorsed as a major barrier to help-seeking among young adults (Ali et al., 2020). As Pedersen and Paves (2014) state, approximately 9 out of 10 participants do not have personal stigma, as they disagree with most personal stigma statements. However, the same authors also mention that this type of stigma mostly influences males, Asians, and those with negative perceptions towards mental health treatment. So, based on this observation, it will be useful to investigate and assess personal stigma among male university students from Asian countries, such as Kazakhstan, and compare results with female individuals. Besides, understanding personal stigma among university students in Kazakhstan could initiate interventions and promote supportive attitudes towards those with EDs.

In order to address gaps in research of knowledge and stigma among young adults in world and Kazakhstan, this study aims to investigate and assess ED-MHL, tendency to believe in myths about EDs and personal stigma among Nazarbayev University students. Understanding the levels of knowledge about EDs among university students will not only allow to improve ED-MHL, but also eliminate tightly related stigma and increase early detection (Nishida-Hikiji, 2019). Moreover, investigation of beliefs in myths among university students will help to determine specific gaps in understanding of EDs and in response develop targeted awareness campaigns and programs to improve knowledge of young people in Kazakhstan, thus eliminating false information and improving attitudes towards others with EDs.

Specific aim(s):

- To assess the level of knowledge about EDs, including an understanding of symptoms, risks, causes, beliefs in ED myths, stigma towards EDs and treatment options, among Nazarbayev University students who are  $\geq 18$  years old.
- To investigate relationships between demographic variables (age, sex, academic major), USS, ED-MHL, and agreement with ED myths among Nazarbayev university students.
- To examine how ED-MHL and belief in ED myths impact understanding of EDs and support-seeking behaviours.

## Materials and Methods

### 2.1 Participants and procedure

This study was conducted at Nazarbayev University (NU), an autonomous research university in Astana, which supports the English academic environment and encompasses a wide range of study programs for local and international students. Participants of this research were NU students, specifically those who were eligible according to the following inclusion criteria:

- 1) Individuals who understand and communicate in English
- 2) Individuals of two sexes (male/female)
- 3) Young adults (Age:  $\geq 18$  but  $\leq 35$ )
- 4) Individuals from all academic programs, except Medical Sciences and MD programs.

All data from respondents was gathered via an anonymous, 44-question online survey created on the Google Forms platform. The survey was based on three English-written questionnaires, and that's why respondents should have known this language to be able to respond. As this research was conducted among Nazarbayev University students, all of them completed the survey without any problem. Other criteria raised from mentioned limitations or gaps from previous research. Furthermore, regarding young adults, this age interval was chosen since people in range of 18-35 years old are officially considered as young adults in Kazakhstan. In general, this survey was designed not to collect or store participants' IP addresses, email addresses or actual names, thus keeping the anonymity of respondents. The invitation for participation, which included information about the study, researchers' contact, and proper URL link, was distributed through NU's email services and using the Snowball recruitment method with the help of NU's social media, like WhatsApp, Instagram and Telegram, on a free-will basis. To ensure voluntary participation, an informed consent form with the option to electronically sign or refuse was provided. Also, if a person decided not to participate in the survey, they could withdraw without penalty, self-explanation or any consequences. If a person consented to participate, the individual was administered to reply to 44 questions, which took around 5-10 minutes to answer. Ethical approval was obtained from the Nazarbayev University Institutional Research Ethics Committee.

### 2.2 Measures

#### *Sociodemographic variables*

The survey contained questions that gathered demographic information, which in turn provided sociodemographic variables, such as age, sex and academic programs.

#### *Eating Disorder Mental Health Literacy (ED-MHL) questionnaire*

The Eating Disorders Mental Health Literacy (ED-MHL) questionnaire designed by Ali and her colleagues (2022) consists of 18 factual statements dedicated to AN and BN and related to their symptoms, risks, causes, treatment, and help-seeking attitude. The statements were developed in English and based on the Depression Literacy Questionnaire (Ali et al., 2022; Griffiths et al., 2004; Gulliver et al., 2012). Among these statements, 8 are correct and assigned as 'True', and the remaining 10 are incorrect and labelled as 'False'. Participants could choose 'True', 'False', or 'Do not Know' to answer a statement. One point added up if a chosen answer option for a statement was

correct, otherwise, it did not. Also, if a participant selected the 'Do not know' option, the number of times a respondent chose this option was counted. In sum, the total score of correct ED-MHL answers and the number of 'Do not know' ED-MHL answers were considered and reported. The questionnaire was used to ask participants' opinions on the accuracy of statements and assess their knowledge and help-seeking behaviour (Feldhege, et al., 2022). Internal consistency of this measure was  $\alpha=0.61$ .

#### *Eating Disorder Myths questionnaire*

The ED Myths questionnaire, designed by Ali and her colleagues (2022), includes 11 myths about EDs. The myths were based on the 'Nine Truths about Eating Disorders' and two items from the National Eating Disorders Collaboration's myths (National Eating Disorders Collaboration, n.d.; Schaumberg, et al., 2017). As Feldhege et al. (2022) report, nine truths were translated into 30 languages to eliminate common misunderstandings about EDs and detect stigma in people from different countries. However, in this study, the original English version was used for ED myths to investigate the spread of them among participants. Answer options were based on a 4-point Likert scale, in which 1= 'Strongly disagree', 2= 'Disagree', 3= 'Agree', and 4= 'Strongly agree'. After obtaining responses, they were dichotomised into disagreement (answer options 1, 2) and agreement (answer options 3, 4) to represent the final ED-Myths score for each respondent. The ED-Myths score was determined by the number of times a participant agreed with a myth. This questionnaire was used to investigate the prevalence of common misconceptions about EDs and related stigma about EDs. Poor internal consistency with Cronbach's Alpha of  $\alpha=0.55$  was noticed in this measure.

#### *Universal Stigma Scale (USS)*

According to Matkins (2020), the Universal Stigma Scale (USS) developed by Ebnetter and her colleagues (2013) contains 'blame/personal responsibility' subscale (5 statements) and 'impairment/distrust' subscale (6 statements). Answer options were built by a 5-point Likert scale, in which 1= 'Strongly disagree', 2= 'Disagree', 3= 'Neither Agree nor Disagree', 4= 'Agree', 5= 'Strongly agree'. The final score for USS blame/personal responsibility and separately for USS impairment/distrust was obtained by summing up points from answers to all statements. The questionnaire was used to measure the ED stigma of participants, especially their attitude towards other people with EDs. In the current sample, internal consistencies of both blame/responsibility subscale and impairment/distrust subscale were high and equal to was  $\alpha=0.87$  and  $\alpha=0.85$ , respectively.

#### *Statistical analysis*

Demographic information (age, sex, academic program), ED-MHL score (score of correct answers and number of 'do not know' answers), ED Myths score (number of 'Agree' and 'Strongly agree' answers), and USS score (blame/personal responsibility score and impairment/distrust score) were used in descriptive statistics. Inferential analysis was conducted to investigate the difference in ED-MHL score, ED Myths score, and USS score between unpaired groups, such as academic programs and sex. Also, differences for all these scores were studied via Kruskal-Wallis test and Mann-Whitney test. Correlation analysis was applied to identify any relationship between age, ED-MHL score, ED Myths score and USS score. Moreover, the relationships between these variables

were explored with Spearman correlation coefficients. In general, all mentioned statistical analyses were performed using the IBM SPSS Statistics program and online statistical calculator (Social Science Statistics, n.d.).

## Results

From 129 students who participated in the study, 8 (6.2%) people were excluded from current investigation since they did not fit by academic program. Remaining 121 participants were involved in different types of statistical analysis although with some exceptions. For instance, in descriptive statistics of USS score and inferential analysis of this variable among sexes, both blame/personal responsibility score and impairment/distrust score were reported from 120 students only as one participant had more than half missing values in both parts. Also, if inferential analyses of ED-MHL score, ED Myths score and USS score among academic programs were performed, then data of 6 different programs only (81 people) was used analysed. The reason of exclusion was that other academic programs had insufficient number of samples (less than 5 students) to obtain accurate and reliable results from the Kruskal-Wallis test. Lastly, in case of correlation analyses, results of 120 participants were used to ensure equal amount of data in all measuring variables. In general, most participants responded to all survey questions, but there were still several students who had one missing value either in ED-MHL questionnaire, ED Myths questionnaire or USS. Table 1, Table 2 and Table 3 report information of the exact sample size for each measuring variable and item. Total score of correct ED-MHL answers, ED Myths score, and USS score included only non-missing items. Moreover, number of ‘Do not know’ ED-MHL answers assumed not only number of times ‘Do not know’ answer was chosen, but also number of times a respondent left an item empty.

**Table 1.** Demographic information and scores of measuring variables obtained from Nazarbayev University students

Variables	n (%)	Median (Q1-Q3)	Range
Sex			
Male	40 (33.1%)		
Female	81 (66.9%)		
Academic program			
Foundation	7 (5.8%)		
Biological Sciences	8 (6.6%)		
Economics	9 (7.4%)		

	Science in Mathematics	13 (10.7%)		
	Sociology	17 (14.1%)		
	Computer Science	27 (22.3%)		
Age		121 (100%)	20 (19-21)	18-26
Score of correct ED-MHL answers		121 (100%)	10 (9-12)	1-16
N 'Do not know' ED-MHL answers		121 (100%)	4 (2-6)	0-17
ED Myths score		121 (100%)	2 (1-3)	0-8
USS blame/personal responsibility		120 (99.2%)	10 (7-13)	5-21
USS impairment/distrust		120 (99.2%)	12 (8-15)	6-25

*Note.* Median, Interquartile Range and Range are reported for students with non-missing values for age and measuring variables. In case of academic programs, percentage for each program was calculated based on 121 participants.

Demographic information, variables related to 5 questionnaires, and descriptive statistics can be seen in Table 1. Among 121 participants, one student got the lowest score of 1, and another one received 16 points for correct ED-MHL answers. No one scored 0 or replied to all 18 statements correctly. Moreover, the most frequently scored result was 10 points earned by twenty-two respondents (26.6%). Regarding number of 'Do not know' ED-MHL answers, only one participant chose this option 17 times, while seven students (5.8%) tried to answer on each statement by choosing 'True' or 'False'. The most popular number of times of choosing 'Do not know' option was 4, which was found in responses of twenty-two participants (18.2%). Next, ED Myths score revealed that prevalent part of respondents (34.7%) agreed with 2 out of 11 statements. Also, out of all participants, only fifteen students (12.4%) disagreed with all myths. While answering to USS blame/personal responsibility statements, the most common result was 5 points and scored by twenty-four respondents (20.0%). In case of USS impairment/distrust statements, there was similar situation of getting the lowest score as the most frequent one. Besides, both percentage of participants who correctly answered to ED-MHL statements and percentage of those who replied by choosing 'Do not know' option for each statement are displayed in Table 2. As for Table 3, it presents percentage of students who agreed with each ED Myths statement.

**Table 2.** ED-MHL statements and information about percentage of participants who gave correct and ‘Do not know’ answers

<b>ED-MHL statements</b>	<b>n (%)</b>	<b>Correct answers (%)</b>	<b>‘Do not know’ answers (%)</b>
1. Effective treatment for eating disorders is available.	121 (100%)	36.4	43.8
2. Once someone has an eating disorder, recovery is very unlikely.	120 (99.2%)	73.3	11.6
3. Rapid weight loss in a short period of time can be a symptom of anorexia nervosa.	121 (100%)	62.8	27.3
4. Genes do not play a role in the development of eating disorders.	121 (100%)	56.2	31.4
5. Eating disorders have the highest mortality rate among all mental illnesses.	121 (100%)	16.5	51.2
6. Males can develop anorexia nervosa, but not bulimia nervosa.	121 (100%)	43.8	52.1
7. If people seek help for an eating disorder early, they will recover faster.	121 (100%)	80.2	11.6
8. People with bulimia nervosa can be slightly underweight, normal weight, or overweight.	121 (100%)	61.2	35.5
9. Most people have experienced binge eating at some point in their life.	119 (98.3%)	3.4	19.0
10. People have to vomit to have bulimia nervosa.	121 (100%)	22.3	46.3
11. It is common for a person with an eating disorder to also experience another mental illness, such as depression.	121 (100%)	82.6	14.0
12. People with eating disorders can stop the behaviour if they want to.	121 (100%)	71.9	13.2
13. Eating disorders only affect adolescent girls and young adult women.	121 (100%)	83.5	11.6
14. Not everyone with an eating disorder needs to seek help.	121 (100%)	75.2	14.0

15. Eating disorders are simply caused by western cultural values of thinness.	121 (100%)	62.0	24.8
16. Rapid weight loss or being very underweight can affect your ability to think.	121 (100%)	69.4	22.3
17. A person with an eating disorder might find it difficult to ask for help from family and friends.	120 (99.2%)	85.8	11.6
18. People who have had an eating disorder will always worry about their weight, even if they have fully recovered.	121 (100%)	9.1	24.0

*Note.* Percentage of correct answers is calculated with consideration of the number of respondents with non-missing values for each statement. Also, percentage of ‘Do not know’ answers is based both on the number of those who selected this option and those who left statement empty.

**Table 3.** ED Myths statements and information about percentage of participants who agreed with the myths by choosing ‘Agree’ or ‘Strongly agree’

ED Myths statements	n (%)	‘Agree’ or ‘Strongly agree’ answers (%)
1. You can tell by looking at someone that they have an eating disorder.	121 (100%)	14.9
2. Families are to blame when people develop an eating disorder.	121 (100%)	34.7
3. An eating disorder diagnosis is not a health crisis that disrupts personal and family functioning.	121 (100%)	13.2
4. Eating disorders are a lifestyle choice, not serious illnesses.	121 (100%)	11.6
5. Eating disorders only affect white upper-middle class teenage girls and young women.	119 (98.3%)	6.7
6. Eating disorders do not carry an increased risk for suicide or medical complications.	121 (100%)	9.1
7. Only society and the media play a role in the development of eating disorders.	121 (100%)	19.0

8. Genes alone predict who will develop an eating disorder.	121 (100%)	10.7
9. Full recovery from an eating disorder is not possible.	120 (99.2%)	24.2
10. Eating disorders are a cry for attention or a person going ‘through a phase’.	121 (100%)	14.9
11. Dieting is a normal part of life.	120 (99.2%)	69.2

*Note.* Percentage of answers representing agreement with ED myths includes the number of students who have non-missing values for each statement.

The results of inferential analysis of ED-MHL score, ED Myths score, and USS score between academic programs and sexes can be observed in Table 4 and Table 5. Significant statistical difference was established between two sexes in all measuring variables, as p-value in all of them was less than significance level of 0.05. On the other hand, there was not significant difference among six academic programs in all measuring variables since p-value in all of them was higher than 0.05. Besides, results of correlation analysis between age, ED-MHL score, ED Myths score, and USS score can be found in Table 6. USS blame/personal responsibility subscale has significant and moderate positive correlation with ED Myths score. Meanwhile, USS impairment/distrust subscale showed significant but low positive correlation with the agreed myths.

**Table 4.** Results from inferential analysis of measuring variables among six academic programs

Variables	Academic program						P-value
	Foundation	Biological Sciences	Economics	Science in Mathematics	Sociology	Computer Science	
	Median Q1-Q3	Median Q1-Q3	Median Q1-Q3	Median Q1-Q3	Median Q1-Q3	Median Q1-Q3	
Score of correct ED-MHL answers	10 (6-11)	10 (7-12.25)	9 (9-11)	10 (10-12)	11 (9-12)	10 (7-12)	0.866
Score of ‘Do not know’ answers ED-MHL answers	6 (5-11)	4 (3-5.5)	5 (4-7)	4 (3-6)	3 (2-5)	4 (2.5-6)	0.232
ED Myths score	2 (1-2)	2 (2-4.25)	2 (2-3)	2 (2-3)	1 (1-2)	2 (1-3.5)	0.343

USS blame/ personal responsibility	11 (9.5-12)	13 (11.25- 13.5)	10 (10-12)	11 (8-13)	9 (5-14)	9 (6.5-14.5)	0.712
USS impairment/ distrust	14 (12.25-16.5)	13.5 (9.75- 17.25)	14 (12-15)	12 (6-14)	12 (8-15)	11 (6-15)	0.505

*Note.* Significance level of 0.05 (p=0.05) is taken in this research.

**Table 5.** Results from inferential analysis of measuring variables among two sexes

Variable	Sex		P-value
	Male	Female	
	Median (Q1-Q3)	Median (Q1-Q3)	
Score of correct ED-MHL answers	9 (6.75-11)	11 (9-12)	0.001
Score of 'Do not know' answers ED-MHL answers	5 (4-8.25)	4 (2-5)	<0.001
ED Myths score	3 (2-4)	2 (1-2)	<0.001
USS blame/ personal responsibility	12 (8.75-15)	9.5 (5-11)	0.001
USS impairment/ distrust	14 (10-17)	12 (7-15)	0.014

*Note.* Significance level of 0.05 (p=0.05) is used in considerations of the results.

**Table 6.** Results from correlation analysis between age and each type of measuring variables

	Age	N correct ED-MHL answers	N 'Do not know' answers	ED Myths Score	USS blame/ personal responsibility	USS impairment/ distrust
Age	r=1	r=0.04546 p=0.62201	r= -0.07625 p=0.40782	r= -0.07951 p=0.38802	r= -0.14083 p=0.12498	r= -0.03495 p=0.70474

<b>N correct ED-MHL answers</b>	r=0.04546 p=0.62201	r=1	r= -0.71362 p<0.001	r= -0.2025 p=0.02655	r= -0.255 p=0.00494	r= -0.11801 p= 0.19925
<b>N 'Do not know' answers</b>	r= -0.07625 p=0.40782	r= -0.71362 p<0.001	r=1	r= -0.01596 p=0.8626	r=0.12044 p=0.19009	r=0.02803 p=0.76119
<b>ED Myths Score</b>	r= -0.07951 p=0.38802	r= -0.2025 p=0.02655	r= -0.01596 p=0.8626	r=1	r=0.5522 p<0.001	r=0.36883 p=0.00003
<b>USS blame/ personal responsibility</b>	r= -0.14083 p=0.12498	r= -0.255 p=0.00494	r=0.12044 p=0.19009	r=0.5522 p<0.001	r=1	r=0.6301 p<0.001
<b>USS impairment/ distrust</b>	r= -0.03495 p=0.70474	r= -0.11801 p=0.19925	r=0.02803 p=0.76119	r=0.36883 p=0.00003	r=0.6301 p<0.001	r=1

*Note.* Significance level of 0.05 ( $p=0.05$ ) is compared with other  $p$ -values of correlation analysis.

## Discussion

In the current study, ED mental health literacy, agreement with myths about EDs, as well as Universal Stigma Scale were investigated among university students of age 18 till 26, who are studying in Nazarbayev University in Kazakhstan. Furthermore, difference of ED-MHL, ED Myths and USS among sex and academic programs, along with the relation of age and measuring variables were examined. Also, ED-MHL questionnaire and ED Myths questionnaire, which were developed by Ali et al. (2022) and found as new measures for mental health literacy about EDs and ED myths, were used to measure knowledge of the participants. Since these two measures are relatively new, results from both should be carefully interpreted in analysis (Feldhege, Bilic, et al., 2022).

Overall, findings indicate moderate ED-MHL in the sample at a median of 10 out of 18. This level of knowledge is revealed to be comparable to other comparable studies among young adults in Western countries where ED-related knowledge is poor despite increased awareness of mental illness (Ali et al., 2020; Lipson et al., 2017). Similar to findings in adolescent samples in research from Feldhege, Bilic, et al. (2022), respondents in this study gave "Do not know" responses on a high percentage of items, reflecting uncertainty or doubt about their knowledge.

Knowledge of treatment and help-seeking for EDs was reasonably strong, with over 80% of the respondents correctly marking that early help-seeking improves recovery outcomes. For

example, as few as 16.5% knew that EDs have the highest mortality rate among any psychiatric disorder. This finding suggests an appeal for educational initiatives that emphasize severity of EDs and complexity as well as offering straightforward definitions.

There was quite low agreement with ED myths, and 1–3 myths were endorsed by the most part of students. However, some such as ‘Families are to blame when people develop an eating disorder’ and ‘Dieting is a normal part of life’ were endorsed by over 34.7% and 69.2% of participants respectively, illustrating widespread misconceptions. This aligns with previous research indicating ongoing media portrayal and cultural stereotypes influencing public knowledge on EDs (Brelet et al., 2021; Schaumberg et al., 2017).

Statistically significant gender differences in all the variables were established, specifically, female students reported higher ED-MHL and lower stigma and myth agreement, while male students reported their opposites. This is consistent with earlier work showing that men had lower awareness of EDs and were less likely to agree that EDs fit them as a gender (Thapliyal et al., 2020; Nicula et al., 2022). These results emphasize the importance of targeting male populations through ED literacy campaigns in a bid to combat gendered disinformation.

Notably, there were no notable differences between academic programs in ED-MHL, ED Myths, or stigma. This result disagrees with some previous research demonstrating higher literacy among students of medicine or health sciences (Górski et al., 2023). Perhaps this indicates that knowledge about EDs is insufficient in most fields within the Kazakhstani educational setting, or general public misinformation prevails regardless of field of specialization.

Correlation analysis also proves existing research indicating that greater ED-MHL is associated with lower stigma and lower myth acceptance (Feldhege, Gulec, et al., 2022). The associations were, however, medium to weak in magnitude, suggesting that stigma and myth acceptance may be somewhat independent constructs and could be influenced by cultural, personal, or social factors not measured in this study.

Some limitations must be acknowledged. First of all, the ED-MHL and ED myths measures used here are still not fully validated. Although they have good face and content validity, their psychometric properties, such as factor structure and internal consistency, are yet to be established. In particular, the ED myths scale was relatively low on internal consistency ( $\alpha = 0.55$ ), possibly because myth content was rather heterogeneous, and respondents differed in their familiarity with different misconceptions. Secondly, the sample was limited to students in just one institution and did not include those from other universities, which could affect generalizability. Although Nazarbayev University is a diverse student body, the findings cannot necessarily be applied to other higher education facilities or regions of Kazakhstan. Thirdly, in the present study, ED symptomatology among participants was not measured. Absent clinical screening, it remains unclear whether interviewees with or without current or historical ED experiences may have shaped their knowledge or beliefs. Future studies should involve ED risk screenings to examine such relations. As for the last limitation, cross-sectional design does not allow any inference of causality between stigma, knowledge, and endorsement of myth. Longitudinal studies would be helpful in establishing whether the enhancement of ED-MHL will result in enduring changes in stigma and help-seeking behaviour.

This study provides one of the earliest pictures of ED-associated knowledge, stigma, and misinformation among young people in Kazakhstan. The findings reveal ED-MHL to be moderate

among Nazarbayev University students but reveal large gaps to be present particularly regarding risk factors and the severity of EDs. Male students were consistently less informed and prone to endorsing ED myths and stigmatizing perspectives, implying gender-sensitive interventions as being essential. In general, these results justify the worth of implementing educational interventions to improve ED-MHL and reduce stigma in university samples. Encouraging accurate knowledge and dispelling harmful myths is most important to supporting early identification and early help-seeking, which are essential to successful ED treatment. Replication of these results in larger and more diverse samples and ongoing validation in ED-MHL and stigma measures are suggestions for future research.

## References

- Akhmetova, S. V., & Terekhin, S. P. (2015). Features of food priorities in urban population of Kazakhstan in regard of consumption of foods with high glycemic index and significant content of fat. *Voprosy Pitaniia*, 84(4), 82-88. <https://doi.org/10.24411/0042-8833-2015-00037>
- Ali, K., Farrer, L., Fassnacht, D. B., Gulliver, A., Bauer, S., & Griffiths, K. M. (2017). Perceived barriers and facilitators towards help-seeking for eating disorders: A systematic review. *International Journal of Eating Disorders*, 50(1), 9–21. <https://doi.org/10.1002/eat.22598>
- Ali, K., Farrer, L., Rieger, E., Griffiths, K. M., O’Shea, A., Feldhege, J., Moessner, M., Bauer, S., & Fassnacht, D. (2022). Eating disorder literacy among young adults in Australia, in preparation.
- Ali, K., Fassnacht, D. B., Farrer, L., Rieger, E., Feldhege, J., Moessner, M., Griffiths, K. M., & Bauer, S. (2020). What prevents young adults from seeking help? Barriers towards help-seeking for eating disorder symptomatology. *International Journal of Eating Disorders*, 53(6), 894-906. <https://doi.org/10.1002/eat.23266>
- Angermeyer, M. C., & Dietrich, S. (2006). Public beliefs about and attitudes towards people with mental illness: a review of population studies. *Acta Psychiatrica Scandinavica*, 113(3), 163-179. <https://doi.org/10.1111/j.1600-0447.2005.00699.x>
- Bjørlykhaug, K. I., Karlsson, B., Hesook, S. K., & Kleppe, L. C. (2021). Social support and recovery from mental health problems: a scoping review. *Nordic Social Work Research*, 12(5), 666–697. <https://doi.org/10.1080/2156857X.2020.1868553>
- Brelet, L., Flaudias, V., Désert, M., Guillaume, S., Llorca, P.-M., & Boirie, Y. (2021). Stigmatization toward People with Anorexia Nervosa, Bulimia Nervosa, and Binge Eating

- Disorder: A Scoping Review. *Nutrients*, 13(8), 2834. <https://doi.org/10.3390/nu13082834>
- Brenes, G. A., Danhauer, S. C., Lyles, M. F., Hogan, P. E., & Miller, M. E. (2015). Barriers to Mental Health Treatment in Rural Older Adults. *American Journal of Geriatric Psychiatry*, 23(11), 1172–1178. <https://doi.org/10.1016/j.jagp.2015.06.002>
- Conner, K. O., Copeland, V. C., Grote, N. K., Koeske, G., Rosen, D., Reynolds, C. F., & Brown, C. (2010). Mental Health Treatment Seeking Among Older Adults With Depression: The Impact of Stigma and Race. *American Journal of Geriatric Psychiatry*, 18(6), 531–543. <https://doi.org/10.1097/JGP.0b013e3181cc0366>
- Corrigan, P. W., Watson, A. C., Warpinski, A. C., & Gracia, G. (2004). Implications of Educating the Public on Mental Illness, Violence, and Stigma. *Psychiatric Services*, 55(5), 577–580. <https://doi.org/10.1176/appi.ps.55.5.577>
- Crisp, A. (2005). Stigmatization of and discrimination against people with eating disorders including a report of two nationwide surveys. *European Eating Disorders Review*, 13(3), 147-152. <https://doi.org/10.1002/erv.648>
- Crisp, A. H., Gelder, M. G., Rix, S., Meltzer, H. I., & Rowlands, O. J. (2000). Stigmatisation of people with mental illnesses. *British Journal of Psychiatry*, 177(1), 4–7. <https://doi.org/10.1192/bjp.177.1.4>
- Crow, S. J., Peterson, C. B., Swanson, S. A., Raymond, N. C., Specker, S., Eckert, E. D., & Mitchell, J. E (2009). Increased mortality in bulimia nervosa and other eating disorders. *The American Journal of Psychiatry*, 166(12), 1342–1346. <https://doi.org/10.1176/appi.ajp.2009.09020247>
- Ebnetter D., Psych D., & Latner J. (2013). Stigmatizing attitudes differ across mental health

disorders: A comparison of stigma across eating disorders, obesity, and major depressive disorder. *The Journal of Nervous and Mental Disease*, 201(4), 281-285. <https://doi.org/10.1097/NMD.0b013e318288e23f>

Elshaikh, U., Sheik, R., Saeed, R. K. M., Chivese, T., & Alsayed Hassan, D. (2023). Barriers and facilitators of older adults for professional mental health help-seeking: a systematic review. *BMC geriatrics*, 23(1), 516. <https://doi.org/10.1186/s12877-023-04229-x>

Feldhege, J., Bilic, S., Ali, K., Fassnacht, D. B., Moessner, M., Farrer, L. M., Griffiths, K. M., & Bauer, S. (2022). Knowledge and Myths about Eating Disorders in a German Adolescent Sample: A Preliminary Investigation. *International Journal of Environmental Research and Public Health*, 19(11), 6861. <https://doi.org/10.3390/ijerph19116861>

Feldhege, J. M., Gulec, H., Moessner, M., Stieler, C., van Stipelen, J., & Bauer, S. (2022). Stigmatization and attitudes toward eating disorders: A comparison between native German adolescents, Turkish immigrant adolescents in Germany, and native Turkish adolescents. *Journal of Mental Health*, 31(1), 99-108. <https://doi.org/10.1080/09638237.2021.1979484>

Fichter, M. M., & Quadflieg, N. (2016). Mortality in eating disorders - results of a large prospective clinical longitudinal study. *The International journal of eating disorders*, 49(4), 391–401. <https://doi.org/10.1002/eat.22501>

Fitzsimmons-Craft, E. E., Balantekin, K. N., Eichen, D. M., Graham, A. K., Monterubio, G. E., Sadeh-Sharvit, S., Goel, N. J., Flatt, R. E., Saffran, K., Karam, A. M., Firebaugh, M.-L., Trockel, M., Taylor, C. B., & Wilfley, D. E. (2019). Screening and offering online programs for eating disorders: Reach, pathology, and differences across eating disorder status groups at 28 U.S. universities. *The International Journal of Eating Disorders*, 52(10), 1125–1136. <https://doi.org/10.1002/eat.23134904>

- Górski, M., Całyniuk, B., Garbicz, J., Szynal, K., Górski, K., & Polaniak, R. (2023). Knowledge of students of selected fields of study on specific eating disorders. *Annales Academiae Medicae Silesiensis*, 77, 67-74. <https://doi.org/10.18794/aams/158557>
- Gratwick-Sarll, K., Bentley, C., Harrison, C., & Mond, J. (2016). Poor self-recognition of disordered eating among girls with bulimic-type eating disorders: Cause for concern? *Early intervention in psychiatry*, 10(4), 316-323. <https://doi.org/10.1111/eip.12168>
- Griffiths, K. M., Christensen, H., Jorm, A. F., Evans, K., & Groves, C. (2004). Effect of web-based depression literacy and cognitive-behavioural therapy interventions on stigmatising attitudes to depression: Randomised controlled trial. *British Journal of Psychiatry*, 185(4), 342-349. <https://doi.org/10.1192/bjp.185.4.342>
- Gulliver, A., Griffiths, K. M., Christensen, H., Mackinnon, A., Calear, A. L., Parsons, A., ... & Stanimirovic, R. (2012). Internet-based interventions to promote mental health help-seeking in elite athletes: an exploratory randomized controlled trial. *Journal of Medical Internet research*, 14(3), e69. <https://doi.org/10.2196/jmir.1864>
- Henderson, C., Robinson, E., Evans-Lacko, S., & Thornicroft, G. (2017). Relationships between anti-stigma programme awareness, disclosure comfort and intended help-seeking regarding a mental health problem. *British Journal of Psychiatry*, 211(5), 316-322. <https://doi.org/10.1192/bjp.bp.116.195867>
- Holliday, J., Wall, E., Treasure, J., & Weinman, J. (2005). Perceptions of illness in individuals with anorexia nervosa: A comparison with lay men and women. *International Journal of Eating Disorders*, 37(1), 50-56. <https://doi.org/10.1002/eat.20056>
- Innes, N. T., Clough, B. A., & Casey, L. M. (2016). Assessing treatment barriers in eating disorders: A systematic review. *Eating Disorders*, 25(1), 1-21. <https://doi.org/10.1080/>

[10640266.2016.1207455](https://doi.org/10.6004/10640266.2016.1207455)

Jorm, A. F., Korten, A. E., Jacomb, P. A., Christensen, H., Rodgers, B., & Politt, P. (1997).

“Mental health literacy”: a survey of the public’s ability to recognise mental disorders and their beliefs about the effectiveness of treatment. *The Medical Journal of Australia*, 166(4), 182–186. <https://doi.org/10.5694/j.1326-5377.1997.tb140071.x>

Lipson, S. K., Jones, J. M., Taylor, C. B., Wilfley, D. E., Eichen, D. M., Fitzsimmons-Craft, E.

E., & Eisenberg, D. (2017). Understanding and promoting treatment-seeking for eating disorders and body image concerns on college campuses through online screening, prevention and intervention. *Eating behaviors*, 25, 68–73. <https://doi.org/10.1016/j.eatbeh.2016.03.020>

Mackenzie, C. S., & Pankratz, L. (2022). Perceived Need, Mental Health Literacy, Neuroticism

and Self- Stigma Predict Mental Health Service Use Among Older Adults. *Clinical Gerontologist*, 48(1), 161–174. <https://doi.org/10.1080/07317115.2022.2058440>

Matkins, A. A. (2020). *Difference in stigma between anorexia nervosa, bulimia nervosa, and binge eating disorder, and the effect of eating disorder symptomatology on stigma in college students*

(Publication No. 1) [Bachelor’s thesis, James Madison University]. Senior Honors Projects, 2020-current.

Matusik, A., Grajek, M., Szlacheta, P., & Korzonek-Szlacheta, I. (2022). Comparison of the

Prevalence of Eating Disorders among Dietetics Students and Students of Other Fields of Study at Selected Universities (Silesia, Poland). *Nutrients*, 14(15), 3210.

<https://doi.org/10.3390/nu14153210>

McGorry, P. D., & Mei, C. (2018). Early intervention in youth mental health: progress and future

directions. *BMJ Mental Health*, 21(4), 182-184. <https://doi.org/10.1136/ebmental-2018-300060>

Napolitano, F., Bencivenga, F., Pompili, E., & Angelillo, I. F. (2019). Assessment of Knowledge, Attitudes, and Behaviors toward Eating Disorders among Adolescents in Italy. *International Journal of Environmental Research and Public Health*, 16(8), 1448. <https://doi.org/10.3390/ijerph16081448>

National Eating Disorders Collaboration. (n.d.). *Myths*. <https://nedc.com.au/eating-disorders/eating-disorders-explained/myth>

Nicula, M., Pellegrini, D., Grennan, L., Bhatnagar, N., McVey, G., & Couturier, J. (2022). Help-seeking attitudes and behaviours among youth with eating disorders: a scoping review. *Journal of Eating Disorders*, 10(1), 21. <https://doi.org/10.1186/s40337-022-00543-8>

Nishida-Hikiji, E., Okamoto, M., Iwanaga, R., Nakane, H., & Tanaka, G. (2019). Mental health literacy regarding eating disorders in female Japanese university students. *Eating Disorders*, 29(1), 17–28. <https://doi.org/10.1080/10640266.2019.1610629>

Pedersen, E. R., & Paves, A. P. (2014). Comparing perceived public stigma and personal stigma of mental health treatment seeking in a young adult sample. *Psychiatry research*, 219(1), 143–150. <https://doi.org/10.1016/j.psychres.2014.05.017>

Plateau, C. R., Arcelus, J., Leung, N., & Meyer, C. (2017). Female athlete experiences of seeking and receiving treatment for an eating disorder. *Eating Disorders*, 25(3), 273–277. <https://doi.org/10.1080/10640266.2016.1269551>

Regan, P., Cachelin, F. M., & Minnick, A. M. (2017). Initial treatment seeking from professional health care providers for eating disorders: A review and synthesis of potential barriers to and facilitators of "first contact". *The International Journal of Eating Disorders*, 50(3), 190–209. <https://doi.org/10.1002/eat.22683>

- Sarkulova, S. M., Tataeva, R. K., & Nursafina, A. Z. (2020). Modern concepts of association of coronary heart disease and metabolic syndrome. *Astana Medical Journal*, *105*(3), 79-86. <https://cyberleninka.ru/article/n/sovremennye-kontseptsii-assotsirovannosti-ishemicheskoy-bolezni-serdtsa-i-metabolicheskogo-sindroma>
- Schaumberg, K., Welch, E., Breithaupt, L., Hübel, C., Baker, J. H., Munn-Chernoff, M. A., Yilmaz, Z., Ehrlich, S., Mustelin, L., Ghaderi, A., Hardaway, A. J., Bulik-Sullivan, E. C., Hedman, A. M., Jangmo, A., Nilsson, I. A. K., Wiklund, C., Yao, S., Seidel, M., & Bulik, C. M. (2017). The Science Behind the Academy for Eating Disorders' Nine Truths About Eating Disorders. *European Eating Disorders Review*, *25*(6), 432–450. <https://doi.org/10.1002/erv.2553>
- Statistics Calculators*. (n.d.). Social Science Statistics. Retrieved April 21, 2025, from <https://www.socscistatistics.com/>
- Stallmann, H. (2010). Psychological distress in university students: A comparison with general population data. *Australian Psychologist*, *45*(4), 249–257. <https://doi.org/10.1080/00050067.2010.482109>
- Steinhausen, H.-C. (2009). Outcome of Eating Disorders. *Child and Adolescent Psychiatric Clinics of North America*, *18*(1), 225-242. <https://doi.org/10.1016/j.chc.2008.07.013>
- Subu, M. A., Wati, D. F., Netrida, N., Priscilla, V., Dias, J. M., Abraham, M. S., Slewa-Younan, S., & Al-Yateem, N. (2021). Types of stigma experienced by patients with mental illness and mental health nurses in Indonesia: a qualitative content analysis. *International Journal of Mental Health Systems*, *15*, 1-12. <https://doi.org/10.1186/s13033-021-00502-x>
- Thapliyal, P., Conti, J., Bandara, R. S. L., & Hay, P. (2020). “It exists”: An exploratory study of treatment experiences in men with eating disorders. *Australian Psychologist*, *55*(5), 534–545. <https://doi.org/10.1111/ap.12455>

- Wacker, E. C. (2018). Barriers and facilitators to seeking treatment for subclinical eating disorders: The importance of supportive relationships. *Journal of Family Psychotherapy*, 29(4), 292–317. <https://doi.org/10.1080/08975353.2018.1471946>
- Wu, J., Liu, J., Li, S., Ma, H., & Wang, Y. (2017). Trends in the prevalence and disability-adjusted life years of eating disorders from 1990 to 2017: results from the Global Burden of Disease Study 2017. *Epidemiology and Psychiatric Sciences*, 29(e191), 1-12. <https://doi.org/10.1017/S2045796020001055>
- Zhuchenko, O. A., & Galiakhmetova, N. P. (2023). AWARENESS OF YOUTH ABOUT EATING DISORDERS AS ONE OF THE FACTORS OF SELF-PRESERVATION BEHAVIOR. *Dnevnik nauki*, 84(2), 18. [http://dnevniknauki.ru/images/publications/2023/2/psihology/Zhuchenko\\_Galiakhmetova.pdf](http://dnevniknauki.ru/images/publications/2023/2/psihology/Zhuchenko_Galiakhmetova.pdf)