

Chronic Fatigue Syndrome among international students

THE EFFECT

OF PERFECTIONISM ON CHRONIC FATIGUE SYNDROME

AMONG

INTERNATIONAL STUDENTS

Chronic Fatigue Syndrome among international students

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1. Introduction

1.1. Chronic Fatigue Syndrome

Chronic fatigue syndrome (CFS) previously known as magic encephalomyelitis (ME) is a condition comprised of chronic fatigue of 6 months or more without any known cause and associated cognitive difficulties [1]. Between 0.2 % and 0.6 % of people in the world are suffering from CFS depending on the utilized definition [2]. Even though it is less known about the epidemiology of CFS in the UK, the recent findings commit a population prevalence of 0.2% to 0.4% [3]. The majority of patients declare low capability in cognitive, somatic, psychological and social functioning which tend to lead professional hassles [4-8]. It is observed that CFS patients possess different somatic issues such as sleep problems, headaches or muscle pain, feeling giddy or sick, rapid or erratic heartbeats [1]. Additionally, a study among CFS patients suggested that to stop efforts aimed at managing pain and accepting this may lead to better outcomes [9]. The condition of chronic fatigue may be associated with an unusually prolonged disease like respiratory tract infections, different types of pneumonia, chronic diarrhea, Epstein Barr virus etc. [10]. The possible causes of CFS are still medically undeclared [11]. Systematic reviews have suggested that the most effective treatment method of CFS is Cognitive Behavior Therapy (CBT) which is highly recommended in order to improve functioning and decrease fatigue among patients [12]. Additionally, in order to improve “action-proneness” (behavioral and cognitive proneness to right action), Graded Exercise Therapy was also illustrated as a significant treatment method [13].

1.2. Perfectionis

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Particularly, psychologically it has been proven that CFS and perfectionism are associated [26-28]. However, there is a limited study about the relationship between perfectionism and CFS. The research found a reported evidence which suggests the relationship between perfectionism and fatigue, in non-clinical cases [29]. Moreover, the studies demonstrated that individuals with CFS reported higher levels of perfectionism compared to a population without CFS [26, 30]. Additionally, another study showed that individuals tend to have higher levels of perfectionism even before the onset of the mental disorder (CFS) [27]. The study suggested that individuals who have CFS reported that they possess high levels of standards [28]. Perfectionism has been defined by two factors such as 'personal standards' (struggling to succeed advanced standards) and 'evaluative fears' (self-doubt and critique) [31]. Perfectionism was specified by Flett and Hewit [32] as “the struggling for faultlessness and excessive perfectionist individuals who claim or desire to be impeccable in all fields of their life”. Despite the fact that some of the studies suggested that there is only negative perfectionism [33, 34], a research has claimed that there are two different types of perfectionism such as negative and positive [35]. In 1998, Slade and Owens suggested a dual-process model of perfectionism such as “positive” and “negative” which derived from Hamachek’s (1978) neurotic and normal perfectionism model [36]. Particularly, positive perfectionism is illustrated as perfectionist performance, which is driven the desires to obtain affirmative consequences, while negative perfectionism is shown as perfectionist performance which is driven by the aim to not have any failures. It needs to be considered that after the discovery of a dual-process model, the effects of perfectionism on people’s well-being and lifestyle have been explained better. There are a few recent studies which investigate the different aspects of positive and negative perfectionism [37-38]. It is known that unhealthy perfectionism (negative perfectionism) may lead to an increase in the

stress and depression levels among CFS patients [39] and this idea is supported by a study which claims the positive correlation between negative perfectionism and CFS [40]. Additionally, it was found that there is a role of perfectionism in the etiology of eating disorders [18], depression [19], and anxiety [20] disorders as well. Consequently, it needs to be emphasized that perfectionism possesses a negative impact on people's lives and well-being [41].

1.3. Self-esteem

The recent findings of the study suggested that a negative or maladaptive perfectionism have negative correlation with self-esteem [40]. In particular, the opinion about ourselves is defined as self-esteem, which may be healthy and unhealthy [42]. Furthermore, healthy self-esteem tends to trigger positive thoughts about people and general life, while people with reportedly lower self-esteem are more likely to have a negative vision, critical light, and low motivation to go through possible challenges [39]. Additionally, regarding the role of self-esteem in perfectionism, the research suggests that CFS patients illustrated lower levels of self-esteem compared to healthy individuals [39]. Additionally, a few researches investigated the association between self-esteem and CFS and found that depressed CFS patients tend to report lower levels of self-esteem rather than patients who do not suffer from depression [43-44]. There is needed considerable evidence that from a theoretical perspective negative perfectionism leads to feelings such as failure which can be a cause of lower self-esteem [45-46]. Additionally, CFS could trigger a negative effect on self-esteem as well. It needs to be considered that particularly CFS patients who are highly self-critical, usually experience high levels of incoherence about their premorbid and postmorbid capabilities [42]. Consequently, individuals who reported higher levels of negative perfectionism in CFS are more likely to have lower self-esteem.

1.4. International students

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It needs to be considered that international students tend to have information overload and they usually possess more problems than home students which may affect their psychological well-being [14]. It is well known that international students are more likely to demonstrate their highest education performance in their country and home environment [15] and therefore they are expected to show the highest results during their study abroad [16]. Consequently, while going through a new adaptation period such as adaptation to new environment, new academic stuff, making new friends and living away from family may have negative effects on international students [15]. There are a few studies which investigated that negative perfectionism is related to various psychological and academic issues which may be reported by international and home students [16-22]. International students are more likely to have a higher self-critical perfectionism which directly impact on their fatigue level. Although there are some mentioned studies which investigated negative perfectionism among international students, however, to our knowledge, the present research would be the first study which explores the association between CFS, perfectionism and self-esteem.

1.5. Aims and hypotheses

The present research aimed to explore the link between perfectionism and CFS, and then considered the relationship between perfectionism and self-esteem utilizing a large cohort, and their relative outcome to fatigue and the risk level of CFS among international students. A further goal of this paper was to assess whether international students would report a higher level of fatigue compared to home students due to the social factors such as culture shock, information overload, less social support.

We hypothesized that

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- 1) The level of CFS which has been reported by international students will be significantly higher than home students;
- 2) The findings of the study will suggest that international students reported positive correlation between perfectionism and CFS;
- 3) Perfectionism and self-esteem will be significantly strong predictors of CFS among both international and home students.

1. Main/Body part

1.1. Participants

Data were collected among students. Participants were both home and international students who participated voluntarily. 110 students were asked to be a participant in the survey. Of the 110 participants, 10 (9.1 %) were removed from all kind of analyses due to the submission of incomplete questionnaires. The ultimate sample comprised of 100 students. Most of the students were home students (59 %) and the rest of them were international students (41%) with a mean age of 23.51 and 21.34 years respectively. Most of the participants categorized themselves as an undergraduate student (61%), and only one participant was a PhD student. Of the 110 participants 38% were postgraduate students. The research was approved by the Coventry University's ethical committee, and all participants were ensured informed consent. The students were provided a pack of questionnaires as a hard copy and requested to return it back after completion.

1.2. Measures

1.2.1. Chalder Fatigue Scale

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The pack of questionnaires consisted of three scales. Participants were asked to fill the measures of fatigue, self-esteem, and perfectionism.

In order to evaluate the intensity of mental and physical fatigue The Chalder Fatigue Questionnaire (CFQ) [47], also defined as Chalder Fatigue Scale has been used. This is a brief 11- item scale evaluating the severity of both mental and physical fatigue according to two different subscales. Of the 11 items, 7 demonstrate physical fatigue (items1-7), 4 demonstrate mental fatigue (items8-11). The items are scored 0-3; (less than usual; no more than usual; more than usual; much more than usual). High level of fatigue is defined by higher scores (range = 0-33). The research has shown that CFQ demonstrated high reliability and validity among healthy persons and individuals with CFS [48].

1.2.2. Multidimensional perfectionism scales

The Multidimensional Perfectionism Scale (MPS-F) [49] assesses six various components of perfectionism on 5- point Likert scales. This is a 35-item scale and scores for each component range as follows: doubts about action (DA) 4–20; concern over mistakes (CM) 9–45; organisation (ORG) 30; parental expectations (PE) 5–25; parental criticism (PC) 4–20; and personal standards (PS) 7–35. Particularly, CM and DA assessed maladaptive perfectionism factor[50-53]. The likelihood to be anxious about making mistakes is defined by the CM subscale, while the likelihood to have doubt about the quality of someone's efficiency described by the DA subscale. The sum of both the DA and CM subscales demonstrates a total score of maladaptive perfectionism (MAL). Higher scores illustrate higher levels of maladaptive perfectionism. The scale demonstrates high reliability and validity [54].

1.2.3. Rosenberg Self-Esteem Scale

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The Rosenberg Self-Esteem Scale (RSE) assessed a level of self-esteem [55]. The 10 items scale on a 4-point (1 = strongly disagree to 4 = strongly agree) response structure is commonly utilized instrument in order to evaluate global self-esteem. Half of the items are negatively-worded (items 3, 5, and 8-10) while other half items are positively-worded (1, 2, 4, 6, and 7); (e.g., " I feel that I am a person of worth, at least on an equal plane with others"; " I wish I could have more respect for myself") . While the data analysis negative items were reverse-coded. A higher level of self-esteem is defined by higher scores. The RSE illustrates high validity and reliability [56].

2.3. Statistical analysis

In order to analyses data, SPSS 15.0 version has been utilized. Of the 110 questionnaires, 10 were excluded since missing items on the scales were more than 25 % of overall responses in the blank.

Descriptive statistics, bivariate correlations, and multiple regression analysis have been carried out. The correlation between predictor variables (maladaptive perfectionism and self- esteem) and outcome (chronic fatigue syndrome) was examined. Based on the results of the correlation, multiple regression was carried out. In order to examine the level of CFS among both student groups, we undertook an independent sample t-test. The correct number of targeted participants were analyzed by Power Analysis and taking into consideration 0.5 correlation the minimum targeted number is 28 for each group of students [57].

3. Results

The multiple regression results demonstrate that self-esteem and perfectionism are not significant predictors of CFS. Although, the study shows no significant difference between the level of CFS

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reports among international and home students, which was negotiated in references to previous studies.

3.1.1. Demographics

Of the 110 students (both home and international), primarily recruited for the cross-sectional study, 100 (90.9 %) fully completed the scales.

According to the findings, international students have reported slightly higher results than home students only in CFS scale, 26.95 and 23.61 respectively. Conversely, home students (Mean: 136.00) have shown moderately higher perfectionism rather than international students (Mean: 131.68). However, the both student cohorts have reported almost the same self-esteem levels. Additionally, the means and standard deviations of the participant scores on each of the subscales (CFS, MPS-F and RSE).

3.3. Independent t-test

An independent sample t-test was conducted to check whether there was a significant difference between reports of CFS for international and home students. Given that Levene's test of homogeneity was non-significant, equal variances can be assumed. The results of the t-test showed that there was no significant difference between groups: $t(98) = 1.708, p=0.091$. Therefore, the report for CFS was not significantly higher amongst international students. However, the levels of CFS which reported by international students are slightly higher than home students.

3.4. Correlation analyses

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A correlation analysis was undertaken to analyse any significant relationships between CFS, perfectionism, and self-esteem. This was done with the data, as well as within groups (international vs. home students). The CFS levels were not found to be correlated with any of the subscales (neither perfectionism nor self-esteem). There was, however, a significant negative correlation between self-esteem and perfectionism when looking at the data as a whole: ($r=-0.198$, $p=0.048$).

Moreover, a significant negative correlation between self-esteem and perfectionism amongst international students was found as well. However, this correlation was not significant ($r=-0.465$, $p=0.002$) for home students.

3.4 Multiple regression analyses

According to the results of the correlations, the relationship between perfectionism, self-esteem, and fatigue was explored. Given that the data fit the assumptions for multiple regression, a forced-entry multiple regression was carried out. However, the variance accounted for by the model was low, and the regression model was non-significant which means that the outcome variable (CFS) cannot be predicted by the two predictor variables (self-esteem and perfectionism):

$F(2, 97) = 1.885$, $p=0.157$. In order to check the lack of relationship a Scatter plot graph was carried out and the result confirmed.

Overall, the percentage accounted for international and home students are 2% and 4% respectively. Perfectionism and self-esteem are not significant predictors of CFS; however, self-esteem is close to significant ($p=0.056$).

4. Discussion

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It needs to be taken into account that the present study is the first research, to our knowledge, which explores the differences between the level of CFS among international and home students and also the first to demonstrate the association between perfectionism, self-esteem, and CFS in a student cohort (N=100). We assessed whether self-esteem and perfectionism were significant predictors of fatigue among both international and home students, which is a new and beneficial finding in the field of CFS. It is particularly intriguing that the international students are not more likely to have CFS. Additionally, self-esteem and perfectionism were not seen to be predictor factors for CFS among students, which may be a significant finding. This is due to the common knowledge that chronic illnesses such as CFS may be a cause of psychological functioning [58]. Although it was expected that zero-order correlation will show a positive relationship between perfectionism and CFS among international students, the findings of the research did not confirm our first hypothesis. The results demonstrate that international students who reported slightly high CFS scores compared to home students showed lower self-esteem as well. In fact, only lack of self-esteem was related to the outcome (CFS) for international students. Home students have reported neither relationship between perfectionism, self-esteem, and CFS. One of our hypotheses was that the level of CFS reported by international students would be significantly higher compared to home students.

However, the results of the study did not confirm the second hypothesis, which means there is no significant difference between the levels of fatigue among both student cohorts. International students reported only slightly higher level of fatigue rather than home students (26.95 and 23.61, respectively). Furthermore, the results suggested that international students do not suffer from maladaptive perfectionism and this may affect their possessed level of fatigue. More particularly, cultural differences, a new education system or academic environment,

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homesickness and living on their own do not affect international students' psychological well-being as expected, and it does not lead to have CFS. Yet, further study is desirable to substantiate these findings while considering the factors such as potential adaptation and their existing life experiences. The present study has not focused on whether they have previous experience such as study abroad or have lived far away from home for more than a year. Additionally, it needs to be considered that some of the participants have been living in the UK for more than a year and during this time they are more likely to be adapted to their new academic environment.

Furthermore, a significant fact should be considered that both international and home students have shown notable high fatigue levels which are almost the same with the CFS patients' mean self-reported scores [40]. The exam period during the data collection may have had an impact on the results significantly and thus, both student cohorts reported a high level of CFS. Our findings may have implications for the well-being of the students during the exam period. In particular, high level of CFS may affect students' productivity and by taking into consideration the finding of the present study, academic staff could develop possible relaxation methods for students during the exam period. These are all factors which could be incorporated into future studies.

The present study possesses several limitations. More particularly, to our knowledge, our study is the first research investigating the level of CFS and the impact of perfectionism on CFS in a student cohort. It needs to be considered that more study is needed to be conducted, taking into consideration the factors which have been missed in the present study. Although international students have not reported a high level of CFS, it may not be generalized and applied to all the UK students. This is particularly the case given the fact that the majority of the participants were solely from Coventry University. Thus, further research is needed to recruit participants from different universities in order to extend our findings. Longitudinal studies which investigate the

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level of fatigue, an effect of perfectionism and self-esteem on CFS are needed to be carried out. As we carried out the survey for two months (May-June), the result of the present research may have been differed had the study been conducted earlier on in the academic year. International students in the present study may have already gone through an adaptation period which may have influenced our results. In future research, data collection could happen and two intervals in the year (start of the academic year vs. the end) in order to allow a comparison of the results. Additionally, during the data collection, it was observed that majority of the participants were fasting due to the religious demands and particularly fasting more than twenty hours tend to lead fatigue and tiredness as well. This may have had an impact on the data collected.

Despite these limitations, our findings illustrate an important role in the CFS field among students. Although international students have not represented significantly higher levels of CFS, perfectionism was not correlated with CFS among the students, and both self-esteem and perfectionism were not significant predictors of CFS among international and home students, we have found that all participated students reported considerable high level of CFS. As this is, to our knowledge, the first study which investigated the CFS field among both student cohorts, further research is needed and necessary to confirm the findings of the present study and to extend them with considering the mentioned limitations.

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The present paper considered the role of perfectionism and self-esteem in chronic fatigue syndrome among international and home students

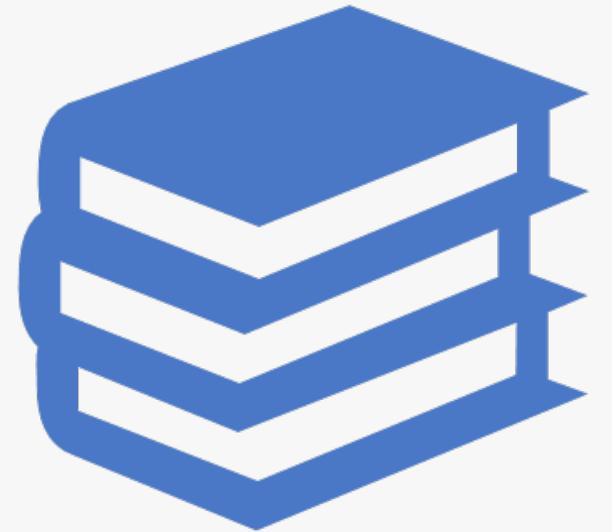
A further goal of this paper was to assess whether international students would report a higher level of fatigue compared to home students due to the social factors such as culture shock, information overload, and less social support.

1.4. International students

International students tend to have information overload and they usually possess more problems than home students which may affect their psychological well-being [14].

It is well known that international students are more likely to demonstrate their highest education performance in their country and home environment [15] and therefore they are expected to show the highest results during their study abroad [16].

Consequently, while going through a new adaptation period such as adaptation to new environment, new academic stuff, making new friends and living away from family may have negative effects on international students [15].





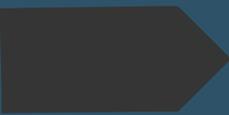
There are a few studies which investigated that negative perfectionism is related to various psychological and academic issues which may be reported by international and home students [16-22].



International students are more likely to have a higher self-critical perfectionism which directly may impact on their fatigue level.



Although there are some mentioned studies which investigated negative perfectionism among international students, however, to our knowledge, the present research would be the first study which explores the association between CFS, perfectionism and self-esteem.



Perfectionism

Particularly, psychologically it has been proven that CFS and perfectionism are associated [26-28]. However, there is a limited study about the relationship between perfectionism and CFS.



Moreover, the studies demonstrated that individuals with CFS reported higher levels of perfectionism compared to a population without CFS [26, 30].



Additionally, another study showed that individuals tend to have higher levels of perfectionism even before the onset of the mental disorder (CFS) [27]. The study suggested that individuals who have CFS reported that they possess high levels of standards [28].

It is known that unhealthy perfectionism (negative perfectionism) may lead to an increase in the stress and depression levels among CFS patients [39] and this idea is supported by a study which claims the positive correlation between negative perfectionism and CFS [40].



1.3. Self-esteem



The recent findings of the study suggested that a negative or maladaptive perfectionism have negative correlation with self-esteem [40].



In particular, the opinion about ourselves is defined as self-esteem, which may be healthy and unhealthy [42].

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- Furthermore, healthy self-esteem tends to trigger positive thoughts about people and general life, while people with reportedly lower self-esteem are more likely to have a negative vision, critical light, and low motivation to go through possible challenges [39].
 - Additionally, regarding the role of self-esteem in perfectionism, the research suggests that CFS patients illustrated lower levels of self-esteem compared to healthy individuals [39].
 - There is needed considerable evidence that from a theoretical perspective negative perfectionism leads to feelings such as failure which can be a cause of lower self-esteem [45-46].

1.1. Chronic Fatigue Syndrome

Chronic fatigue syndrome (CFS) is a condition comprised of chronic fatigue of 6 months or more without any known cause and associated cognitive difficulties [1]. Between 0.2 % and 0.6 % of people in the world are suffering from CFS depending on the utilized definition [2].

The majority of patients declare low capability in cognitive, somatic, psychological and social functioning which tend to lead professional hassles [4-8].

It is observed that CFS patients possess different somatic issues such as sleep problems, headaches or muscle pain, feeling giddy or sick, rapid or erratic heartbeats [1]

Systematic reviews have suggested that the most effective treatment method of CFS is Cognitive Behavior Therapy (CBT) which is highly recommended in order to improve functioning and decrease fatigue among patients [12].



We hypothesised that



1) The level of CFS which has been reported by international students will be significantly higher than home students;



2) The findings of the study will suggest that international students reported positive correlation between perfectionism and CFS;



3) Perfectionism and self-esteem will be significantly strong predictors of CFS among both international and home students.

Methods

- Data were collected among Coventry University students. Participants were both home and international students who participated voluntarily. 110 students were asked to be a participant in the survey.
- The research was approved by the Coventry University's ethical committee, and all participants were ensured informed consent
- In order to evaluate the intensity of mental and physical fatigue The Chalder Fatigue Questionnaire (CFQ) [47], also defined as Chalder Fatigue Scale has been used which demonstrated high reliability and validity among healthy persons and individuals with CFS [48].
- The Multidimensional Perfectionism Scale (MPS-F) [49] assesses six various components of perfectionism on 5- point Likert scales. The scale demonstrates high reliability and validity [54].
- The Rosenberg Self-Esteem Scale (RSE) assessed a level of self-esteem [55]. The RSE illustrates high validity and reliability [56].

Results

- Means and standard deviations of participant scores on the subscales of CFS (CFSMEAN), MPS-F (PRFMEAN) and RSE (SEMEAN).

| | Type of Students | N | Mean Sums | Std. Deviation |
|----------------|------------------|----|-----------|----------------|
| CFSMEAN | 1 International | 41 | 26.95 | .62 |
| | 2 Home | 59 | 23.61 | .57 |
| PRFMEAN | 1 International | 41 | 131.68 | .44 |
| | 2 Home | 59 | 136.00 | .44 |
| SEMEAN | 1 International | 41 | 22.51 | .61 |
| | 2 Home | 59 | 22.72 | .57 |

Correlation between fatigue (CFSMEAN), perfectionism (PRFMEAN), and self-esteem (SEMEAN) among international students (n=41).

* Correlation is significant at the level of .05

| | | CFSMEAN | PRFMEAN | SEMEAN |
|---------|-----------------|---------|---------|---------|
| CFSMEAN | Pearson | 1 | .154 | -.129 |
| | Correlation | | | |
| | Sig. (2-tailed) | | .337 | .421 |
| PRFMEAN | Pearson | .154 | 1 | -.465** |
| | Correlation | | | |
| | Sig. (2-tailed) | .337 | | .002 |
| SEMEAN | Pearson | -.129 | -.465** | 1 |
| | Correlation | | | |
| | Sig. (2-tailed) | .421 | .002* | |

A multiple regression looking at self-esteem and perfectionism as a predictor for CFS in both student cohort.

a. Predictors: (Constant), SEMEAN, PRFMEAN

b. Predictors: (Constant), SEMEAN, PRFMEAN

| | | Model1 |
|----------------------------------|----------------------|-------------------|
| R | | .193 ^a |
| R Square | | .037 |
| Adjusted R Square | | .018 |
| Std.Error of the Estimate | | .592 |
| Change Statistics | R Square Change | .037 |
| | F Change | 1.88 |
| | Df1 | 2 |
| | Df2 | 97 |
| | Sig. F Change | .15 |
| | Durbin-Watson | |

Discussion

It is particularly intriguing that the international students are not more likely to have CFS.

Additionally, self-esteem and perfectionism were not seen to be predictor factors for CFS among students, which may be a significant finding.

Although it was expected that zero-order correlation will show a positive relationship between perfectionism and CFS among international students, the findings of the research did not confirm our second hypothesis

The results demonstrate that international students who reported slightly high CFS scores compared to home students showed lower self-esteem as well.



Discussion

- In fact, only lack of self-esteem was related to the outcome (CFS) for international students. Home students have reported neither relationship between perfectionism, self-esteem, and CFS.
- One of our hypotheses was that the level of CFS reported by international students would be significantly higher compared to home students.
- However, the results of the study did not confirm the first hypothesis, which means there is no significant difference between the levels of fatigue among both student cohorts. International students reported only slightly higher level of fatigue rather than home students (26.95 and 23.61, respectively).
- More particularly, cultural differences, a new education system or academic environment, homesickness and living on their own do not affect international students' psychological well-being as expected, and it does not lead to have CFS

Limitations



Previous
experience of
students



Some of them have
been living in the
UK for more than a
year



The exam period



Time of the survey
carried out -
Ramadan

Discussion

- Despite these limitations, our findings illustrate an important role in the CFS field among students.
- Although international students have not represented significantly higher levels of CFS, perfectionism was not correlated with CFS among the students, and both self-esteem and perfectionism were not significant predictors of CFS among international and home students, we have found that all participated students reported considerable high level of CFS.
- As this is, to our knowledge, the first study which investigated the CFS field among both student cohorts, further research is needed and necessary to confirm the findings of the present study and to extend them with considering the mentioned limitations.

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Thank you for
your
attention!

