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Why And How Do Students Need To Have Their Mental Health Considered In Engineering Schools?

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WHY AND HOW DO STUDENTS NEED TO HAVE THEIR MENTAL HEALTH CONSIDERED IN ENGINEERING SCHOOLS?

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ABSTRACT

This paper addresses the students' mental health in higher education and more specifically in engineering schools. Several studies have shown student mental health

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and wellbeing can affect students' academic performance. We investigate how student's mental health is considered in engineering schools as well as how it should be and study the case of our engineering school.

First, we present several research and studies conducted on how mental health is considered in higher education and its impact on academic performance.

In the second part, we study the case of our engineering school with the implementation of a survey among students and teachers to collect their feedback. We add to this survey a collection of testimonies from students. We will analyse how mental health is considered and the impact of addressing mental health on student success in an engineering school.

Finally, we present possible solutions to improve the consideration of mental health. These solutions are aimed at administrations, teaching staff and engineering school students. Indeed, the consideration of mental health must be global and concern the entire educational organisation.

1 INTRODUCTION

1.1 Background

Student mental health remains a subject that is not sufficiently addressed (Morvan and Frajerman 2021) in France. Currently in France, higher education institutions are not required to have indicators on the mental health of their students. Yet student ill-being is a major issue. Several studies on the emotional distress of European and North American students highlight this ubiquitous problem, less frequent in non-student populations of the same age. In 2013, 20% of 10–24-year-olds were subject to mental health problems each year (depression, anxiety). More recently, after the COVID crisis, a survey carried out by a health insurance company (LMDE) indicates that in 2022, 68% of students in France were in a situation of ill-being. 52% said that Covid had affected their social interactions with friends and family, 44% their emotional and family life. In addition, more than half of the students interviewed were afraid that their degree obtained during the health crisis is devalued.

Student ill-being is defined in our article as an unusual negative feeling, which can be a combination of sadness, anxiety, a feeling of "fatality" with a loss of interest in certain aspects of one's life. In concrete terms, a study (Boujut, Koleck, Bruchon-Schweitzer and Bourgeois. 2009) shows that this feeling of ill-being can lead to emotional distress, depressive symptoms, suicidal thoughts, a feeling of loneliness, stress, anxiety (strongly related to work and academic success, as well as time and money), obsessive-compulsive disorder or substance abuse. Another study (Gosselin and Ducharme 2017) identifies more precisely the main factors of student distress and anxiety. Distress can be triggered by fatigue or exhaustion, academic pressure, family conflict. The three most frequent symptoms of anxiety were the feeling of not being capable, the fear of failing and the fear of disappointing.

When students use the help available for their mental health, their anxiety symptoms decrease. However, the usage of support is influenced by existing bias about mental health, that reduce students' willingness to seek help.

According to the World Health Organization (WHO), mental health is "a state of well-being that enables people to achieve their potential, cope with the normal challenges of life, work successfully and productively, and be able to contribute to the community". Mental health is determined by many factors: socio-economic, biological, and environmental, including the working environment. Working conditions are indeed an important determinant of mental health.

It has also been shown that epidemics contribute to the deterioration of mental health. Students are identified as a part of the population that is particularly vulnerable to anxiety, depression, stress...

1.2 Aim and questions

Faced with this problem in their daily lives, student engineers decided to write an article on the mental health of students in engineering schools. To do this, we built a survey:

- to measure whether this is a reality in our school and on what scale.
- to evaluate the perceived impact of studies on students' well-being.
- to identify measures that have a positive impact on students' mental health.

2 METHODOLOGY

An online survey was submitted in May 2023 to all students of EPF, a general engineering school. Data were collected during a week holiday, specifying their home

campus (Cachan, Montpellier or Troyes), their year of training (from the first to the fifth-year post-bac) and their gender.

The survey included both closed and open questions: 16 questions on students' general well-being, 4 questions on the perceived impact of their studies on their ill-being, 6 questions on mental health support and awareness.

3 RESULTS

Our final sample consisted of 185 responses: 85 students from Cachan, 73 from Montpellier and 27 from Troyes. We wanted to obtain representative samples from each campus because student support and infrastructures are not the same for the different campuses.

Our sample is composed of 109 men, 71 women and 5 not defined. We'll take an interest in comparing results between our men and women samples.

The five years of engineering studies are divided into two cycles. The 3-year Bachelor cycle includes two years of preparatory classes. The last 2 years (Master cycle) are devoted to one major of the nine proposed by EPF for one half and internships for the other half. 77% of the respondents to the survey are Bachelor students (143 students), the remaining are Master students (42 students). In the same way we'll compare results between the different academic years, to study the impact on mental health.

3.1 Sense of belonging

The first questions of the survey deal with the students' feeling of belonging to their environment: whether they feel they belong at school, then in their class and finally whether they feel surrounded and supported overall. Students feel that they belong in the school (77% "Totally agree" and "Agree") and in their year group (87%). Students globally feel supported and surrounded (75%). There is a disparity between campuses on this question: from 60% to 83%. Few students (5%) answered "Disagree" or "Strongly disagree" to the three questions. The students who responded to the survey generally feel that they belong at school.

3.2 Ill-being

Despite this feeling of belonging, 68% of the students interviewed answered "Yes" to the question "Have you experienced periods of ill-being during this school year?". 60% of respondents identifying as men experienced periods of ill-being during the school year. This proportion rises to 78% when respondents identify as women. Regarding the academic year, the percentage is similar for all years: about 2/3 of the respondents experienced periods of ill-being during the academic year and this reaches 80% for 2nd year students. There is also a disparity depending on the campus: from 64% to 75%.

This highlights the fact that considering the mental health of students in an engineering school is not limited to their overall sense of belonging. It is also necessary to provide support during periods of ill-being, even if they feel well for most of the year, particularly regarding the consequences of these periods.

Indeed, different consequences of ill-being were then proposed to the students who answered "Yes" (Fig. 1). We note that among these students: 63% have altered the

quality or quantity of their sleep, 55% became isolated, 55% could no longer concentrate, 36% changed their eating habits, 30% could no longer manage their daily lives, 15% had suicidal thoughts, 14% had an addictive behaviour, 9% had harmed themselves.
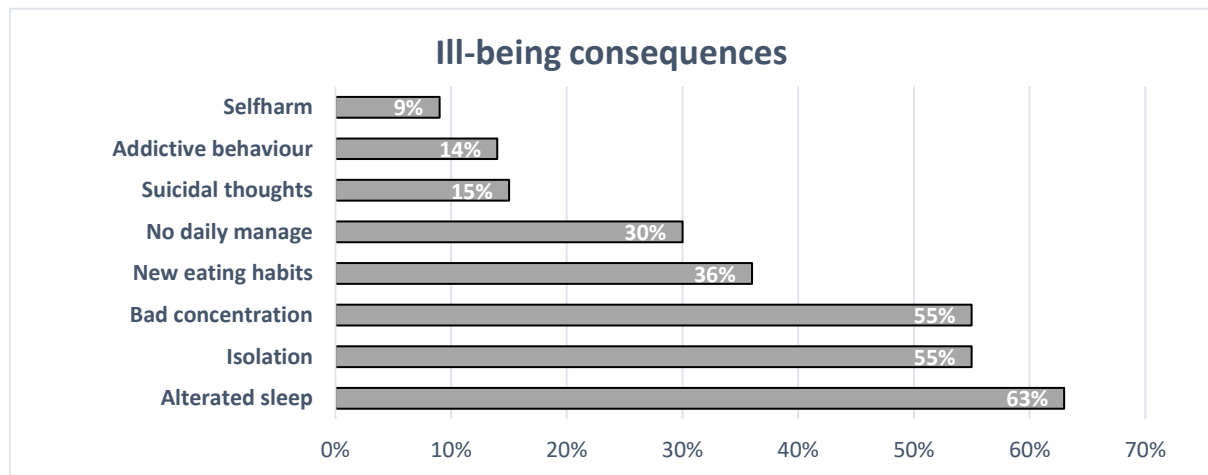

Ill-being consequences

- Selfharm 9%
- Addictive behaviour 14%
- Suicidal thoughts 15%
- No daily manage 30%
- New eating habits 36%
- Bad concentration 55%
- Isolation 55%
- Alterated sleep 63%

Fig. 1. Consequences of ill-being on students

70% of students who experienced ill-being felt that it was accentuated by their studies.

3.3 Stress

In the collective imagination, student ill-being is often associated with, or even equated with, stress related to academic pressure. We asked students to evaluate their stress level on a scale from 0 (no stress) to 10 (absolute unbearable stress). Levels 4 and 5 are average stress. Level 6 and beyond correspond to high stress.

When the question of stress is raised in our survey, we obtain (Fig. 2.):

- Exam period stress of 5.62/10 on average.
- Academic stress (excluding assessments) of 4.35/10 on average.
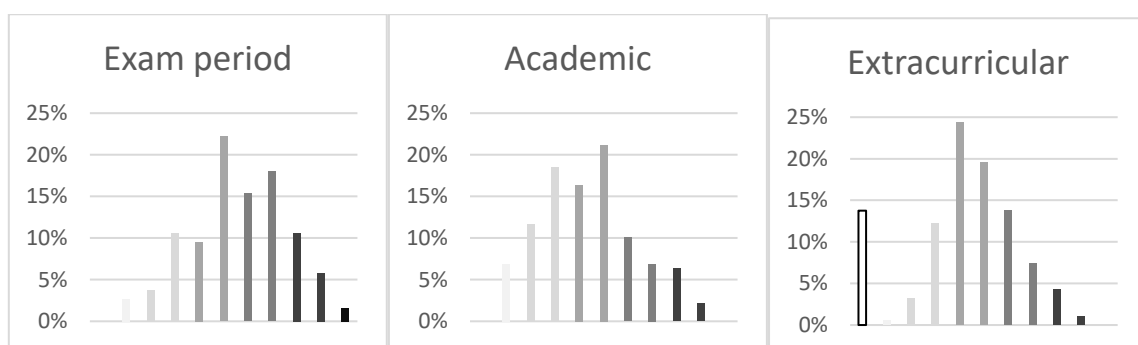- Extracurricular stress of 4.16/10 on average.

Fig. 2 Students' stress level (from 0 to 10 from left to right) distribution during (a) exam period, (b) academic time and (c) extracurricular time

Students were asked about the main stressors in their studies. The most common answer is "exams and projects reports". More surprisingly, it's not the difficulty of the work that is mentioned next, but the time management. Indeed, the overlapping of different exams and reports deadlines on certain weeks are difficult to manage for

students. This feeling of accumulation and lack of time to do everything is very much mentioned in the feedback. Late submission of grades is also a source of stress for students. Sometimes, they're uncertain until the end of the semester whether they will pass a course without having to retake it. Another source of stress mentioned is the relationship between students (especially during group work), but also between students and teachers (lack of availability, poor communication, arbitrary group choices). Finally, fear of failure, school fees, and future career choices cause stress.

3.4 Talking about mental health

Whilst approximately 68% of students have experienced ill-being during the academic year.

This ill-being is not necessarily communicated by the respondents. Half of them (48%) feel the need to hide their mental state at school. However, only 18% of them felt that communicating about their mental health had a negative impact on social relations at school. We observe a discrepancy between students' overall opinion on communicating their mental health and their actions.

3.5 Ill-being consequences

We decide to look at whether the ill-being of men and women is expressed in the same way. Respondents who had faced periods of ill-being identified the behaviors in which they recognized themselves. Women seem to be prone to ill-being more than men and to suffer more consequences: we have 5 consequences concerning more than 30% of our women sample against only 3 for our men sample (Fig. 3). Some consequences such as eating disorders affect women more than twice as men, while men seem to be more prone to addictions.
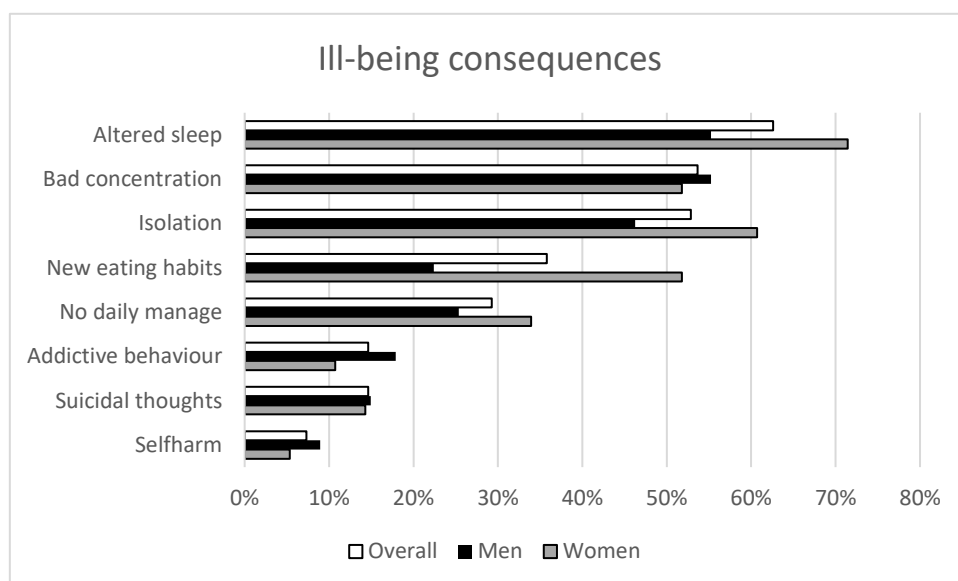

Fig. 3. Consequences of ill-being on men and women

3.6 Improving the consideration of mental health

Students' lack of communication about their mental health can also be explained by their lack of knowledge of the services provided by the school: 64% of respondents felt that they were not aware of the services offered by the school. Depending on the campus, the lack of knowledge goes from 43% to 77%.

More generally, 55% of the respondents did not feel sufficiently informed about the existing programs.

Different activities and support services were suggested to the students. They were asked to identify from a list which ones they could apply for. Students voted for the following solutions (Fig. 4.). As relaxation is the most popular answer, this highlights the importance of reducing the stress felt by student.
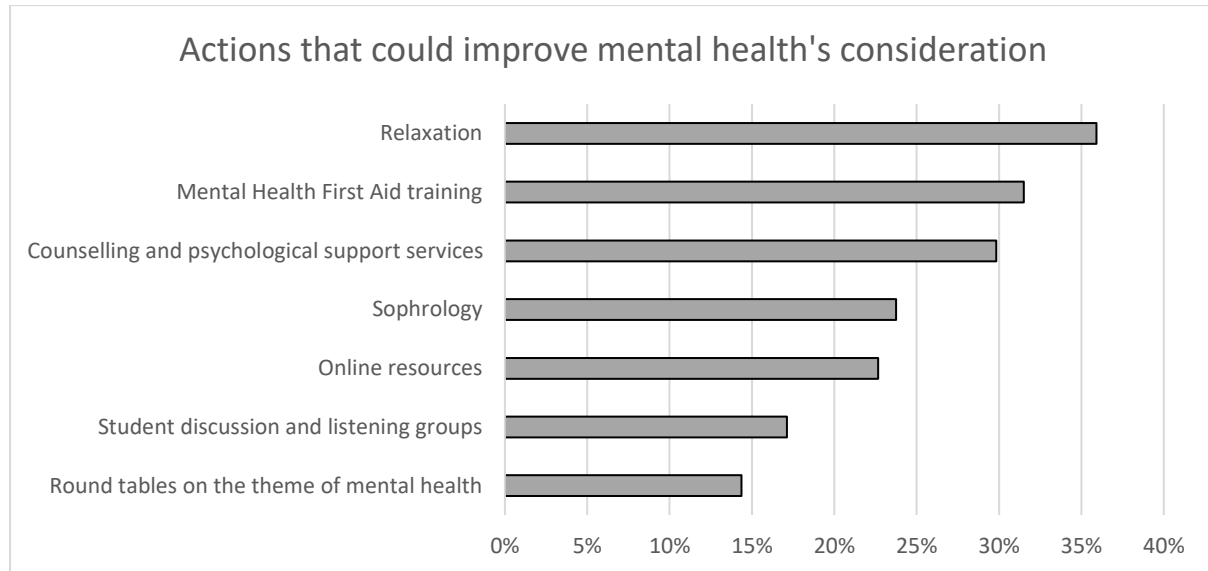

Fig. 4. Solutions to improve mental health's consideration.

Besides these solutions the students asked for more sensibilization actions concerning mental health, to change how the subject is seen by teachers and administration's members. They'd like to have a place, or a school organization dedicated to mental health.

4   SUMMARY AND ACKNOWLEDGMENTS

The survey and this study assessed the mental health of students, identified stressors that the school can act on, and suggested ways to improve the consideration of mental health. Our specific comparisons show that ill-being is present in every study year of an engineering school. Solutions to improve students' mental health must consider the different types of work required of students. Besides, women seem to be particularly affected, it is also to be considered when thinking about solutions.

One of the positive aspects of this work is that it has allowed mental health to be talked about more freely in the school and to show that it is an important issue. It is planned to continue this study next year by collaborating with faculties of psychology and education. It will also be useful to compare and discuss the specific context of engineering student with the work of Jensen (Jensen and Cross 2019), (Jensen et al. 2023). This study indicates that many students perceived high stress and poor mental health to be normal and expected in engineering.

We would like to thank all the students who responded to this survey, as well as all the people who supported this project, including M-P. Cuminal, DEI officer and F. Stephan, campus director.

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