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ANXIETY LEVELS IN STRUCTURAL ENGINEERS

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ABSTRACT

The objective of this work is to analyze the anxiety levels of civil engineers dedicated to structural engineering. The research is a quantitative approach with a non-experimental, descriptive, transversal, and correlational design. We worked with a sample of 56 civil engineers, the Zung Self- Rating Anxiety Scale (1965) and a sociodemographic survey were applied. The results show that 57.1% of the sample have normal anxiety, and 42.9% moderate anxiety. According to the hours of work per day, 14.3% of the participants present moderate anxiety with work shifts from 15 to 17 hours. In addition, in the range of 12 to 14 hours, 21.4% of the participants present moderate anxiety, which indicates that long working hours tend to influence the anxiety levels of engineers.

Keywords: anxiety levels, structural engineers, mental health.

INTRODUCTION

Structural engineering is a branch of civil engineering that focuses on the design, analysis, and construction of structures, such as buildings, bridges, and tunnels. Structural engineers are responsible for ensuring that these structures are safe, stable, and able to withstand loads and forces, such as wind, earthquakes, and other natural disasters. They use their understanding of materials, mechanics, and engineering principles to design and analyze structures, and to ensure that they meet building codes and standards. The goal of structural engineering is to create structures that are functional, safe, and aesthetically pleasing, while also considering factors such as cost, sustainability, and constructability. Structural engineers play a critical role in the built environment and are essential in the design, construction, and maintenance of safe and reliable infrastructure

As a structural engineer, it is common to experience anxiety levels (Guo et al., 2022) that vary based on different situations and stages of the project. The nature of this job can be quite stressful, as it involves designing, planning, and overseeing the construction of large and complex structures. One of the main sources of anxiety for structural engineers is the responsibility they bear for the safety of the structures they design. A minor mistake or oversight could potentially lead to catastrophic consequences, including loss of life and property damage. This responsibility can lead to a sense of pressure and a constant need for perfection, which can lead to anxiety.

Additionally, many structural engineers work in fast-paced environments that require them to meet tight deadlines, work long hours, and manage multiple projects simultaneously. This pressure to meet deadlines can create a sense of urgency that can be overwhelming at times, leading to anxiety. Furthermore, structural engineers must constantly keep up with the latest technologies, tools, and techniques to remain competitive in the industry. This means that they must continue to learn and adapt to new advances in their field, which can lead to feelings of inadequacy and a fear of falling behind.

On the other hand. the COVID-19 pandemic has also impacted the anxiety levels of structural engineers, as it has disrupted the industry's

workflow and has led to an uncertain future. The pandemic has caused delays and cancellations of projects, which can cause financial instability and job insecurity, leading to higher levels of anxiety.

Figure 1 shows some steps that structural engineers can take to manage anxiety levels. Employers can also help by implementing policies that promote a healthy work-life balance and providing resources for mental health support. In conclusion, anxiety levels in structural engineers can be significant due to the nature of their work, but it is important to take steps to manage it to ensure the well-being of both the individual and the structures they design.

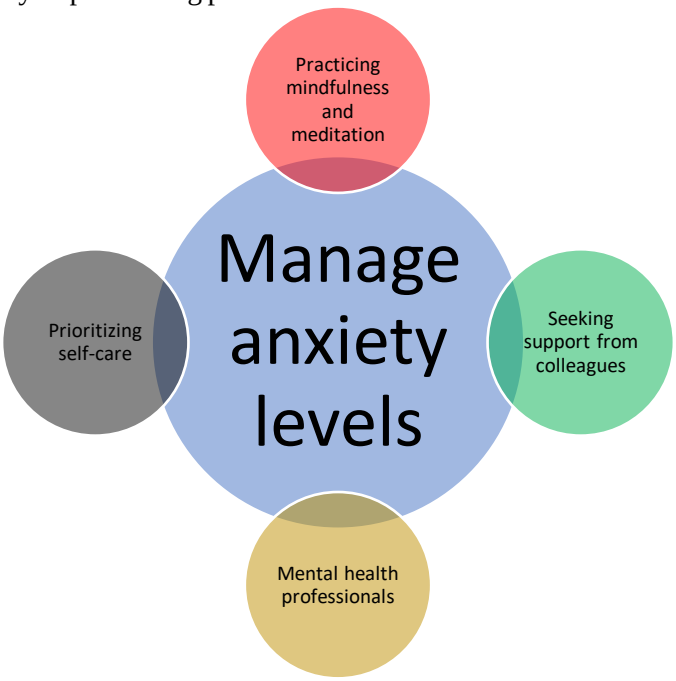

Figure 1. Measures to manage anxiety levels

METHODOLOGY

This work was framed under a quantitative approach with a non-experimental, descriptive, transversal, and correlational design since it comprises the description, registration, analysis, and interpretation of the current nature (Tamayo, 2006). The population is composed of 54 engineers. To measure anxiety levels, the Zung Anxiety scale created by William Zung in 1965, made up of 20 statements, was used. The responses are evaluated by a Likert-type scale consisting of four response options (Astocondor, 2001).. Univariate analysis was performed with the information obtained from the Zung Anxiety Scale and with data from the sociodemographic survey.

RESULTS AND DISCUSSIONS

Table 1 shows the information collected from the sociodemographic survey. It can be seen that most of the respondents are between the ages of 36 to 49 years (50%), followed by 24 to 35 years (42.9%). 92.9% are men, this may be due to the fact that civil engineering is traditionally completed mostly by men, in addition, few women are dedicated to the area of structural design. On the other hand, 64.3% of those surveyed have been working in their companies for 6 years or more, indicating that engineers who work in this area of engineering find job stability. Finally, it is evident that the majority of those found work long hours.

Table 1. Data from the sociodemographic survey

Age	**Number**	**Percentage (%)**
24-35 years	24	42.9
36-49 years	28	50.0
50 years or more	4	7.1
Sex	**Number**	**Percentage (%)**
Male	52	92.9
Female	4	7.1
Current employment time	**Number**	**Percentage (%)**
7 months- 1 years	4	7.1
2-3 years	8	14.3
4-5 years	8	14.3
6 years or more	36	64.3
Working hours per day	**Number**	**Percentage (%)**
6-8 hours daily	4	7.1
9-11 hours daily	20	35.7
12-14 hours daily	20	35.7
15-17 hours daily	12	21.4

Table 2 shows the anxiety levels. Of the engineers who participated in the research, 57.1% present a normal level of anxiety, however, 42.9% score with moderate anxiety, which indicates that there are conditions that are affecting the emotional state of some participants.

Table 2. Anxiety level

Anxiety level	**Number**	**Percentage (%)**
Normal	32	57.1
Moderate	24	42.9
Severe	0	0

Extreme	0	0

Table 3 shows the anxiety levels according to the age of the participants. Anxiety levels are normal in 28.6% of participants in the age range of 24 to 35 years, in the same age range 14.3% present moderate anxiety, which indicates the presence of emotional disturbances related to anxiety. in most young adult participants. In the second age range (36 to 49 years) it is evident that 28.6% have moderate anxiety and in the last age range there are normal levels of anxiety.

Age	**Anxiety level**	
	Normal	**Moderate**
24-35 years	16 (28.6%)	8 (14.3%)
36-49 years	12 (21.4%)	16 (28.6%)
50 years or more	4 (7.1%)	0

The anxiety levels in the 56 participants indicate that 57.1% (32 people) have normal anxiety, while 42.9% (24 people) suffer from moderate anxiety, which confirms that there is a significant rate of moderate anxiety in engineers. structural, however, there are no previous studies in the treated population with which the results obtained can be compared. The hours of work per day are a relevant factor to consider when talking about anxiety. It was obtained that of the total of 56 people, 4 work from 6 to 8 hours a day presenting normal anxiety levels. There are 20 individuals who work 9 to 11 hours a day, and 4 of them suffer from moderate anxiety. Those who work 12 to 14 hours a day are 20 people, and 12 of them suffer from moderate anxiety. Those who work 15 to 17 hours a day are 12 people, and 8 of them suffer from moderate anxiety. It is clear that there is a considerable number of people who work excessively, that is, more than 8 hours a day. The risks of overwork may be related to the type of work, assignment of tasks that do not suit the person's skills or that the workload is permanently high, which can affect mental health and cause symptoms anxiety, which if not treated could lead to psychiatric disorders or harmful use of alcohol, drugs or psychotropic drugs (Langdon & Sawang, 2018; Üstün, 2022).

CONCLUSIONS

The following conclusions can be addressed:

– The general anxiety levels in the sample show that the majority are in a normal state of anxiety, however, there are participants with moderate anxiety, which indicates that the person focuses only on immediate concerns. This implies a decrease in the field of perception.

– It was found that working hours directly influence the anxiety levels of the participants. At longer working hours, moderate anxiety levels were reported.

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