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Computer, Teleworking And Covid 19 Syndrome In Undergraduate And Postgraduate Students

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Abstract

The frequent use of digital display screens (PVD) leads to visual efforts, ocular alterations, and the tearing of the eye called Computer Visual Syndrome (SIV), the objective is to know the level of the syndrome in undergraduate and graduate students of the University National Chimborazo who are users, the method consists of the application of the Computer Vision Syndrome Questionnaire (CVS-Q) test in a population of 97 students, which was applied randomly through Google forms where results were obtained with values of means and high that provide great information on its prevalence to diagnose, intervene and treat before it degenerates into an occupational disease that is aggravated by the presence of Covid 19 and long working hours.

Keywords: Computer Syndrome, Telework, Covid - 19, Undergraduate and graduate students

Introduction

The present research on computer syndrome, telework, and Covid 19 in undergraduate and graduate students at the National University of Chimborazo, allows determining the correlation that exists between sociodemographic variables and levels of CVS-Q Syndrome in times of Telework due to the presence of Sars - Cov 2 in the country.

The presence of COVID-19 in the world and the country has caused a sudden change in work, socioeconomic, health, and education activity that affects all Ecuadorians and is no exception undergraduate and graduate students who through online education and the use of virtual platforms, video conferences receive an education. The COVID-19 pandemic to the World Health Organization (WHO) in March 2020 and (Chetty et al, 2020), state that for people who use electronic devices the most, the future consequences are serious regarding the musculoskeletal and visual system of people.

Computer Visual Syndrome is considered an emerging health problem with the use of digital display screens (PVD), and in the absence of a test to determine the initial symptoms and signs due to prolonged exposure of the computer to the view of users.

Working at home on digital display screens (PVD) requires postural analysis to determine musculoskeletal discomfort. To avoid mental and physical stress, an ergonomic design of the workstation is recommended (ergonomic table and chair), organization of working time, avoiding disturbances and interruptions) the work environment at home must be adapted to avoid work-related occupational ailments. (Mojtahedzadeh et al., 20219).

Teleworking in teachers leads to possible risk factors and health impacts, this type of work is an occupational risk due to a poor ergonomic position and dysergonomic jobs not adapted to the user causing musculoskeletal and psychosocial problems generating discomfort. (González et al., 2019).

Teleworking seeks to distance the teacher in this case from the pandemic, produces positive and negative effects to be part of this modality of work and that can cause affection to mental and physical health, so it is necessary to adapt the places of telework to generate comfort, safe and healthy environments. (Morilla et al., 2021).

In some studies, on it% of users of Digital Display Screens (PVD), between 70 to 90% have the Computer Visual Syndrome (SVI). In Peru, the administrative staff has approximately 59% of cases of visual fatigue (Portello et al, 2012) and (Thomson, 1998).

As there are symptoms in the population by computer tools (PVD), it is stipulated to establish an analysis of risk factors associated with (SVI), which may be personal and external factors that favor the increase of the syndrome. The factors that cause VI by the use of the computer are multiple causes such as age, sex, previous eye diseases. Type of work, diversity of lifestyles that favor the appearance or suffering of ERS (Yan et al, 2008).

The symptoms of ERS are divided into three phases: 1.- ocular (eye without tearing, irritated, pruritus); 2.- visual (eye fatigue, blurred vision, double, headache); 3.- postural symptoms (cervicalgia, shoulder, and back pain) that are affecting the PVD user. (Visual Ergonomics Handbook, 2005).

Additionally, the playful strategy and its advantages is little known by the teacher. The educational playful game proposes new teaching strategies in prevention of occupational hazards, based on the application of playful methods such as a regulated game of pre-reflective action, abstract-logical symbolization lived for the achievement of significant learning (Cabezas, 2019).

Social networks do have a relationship with academic performance, but, contrary to what one might think, they do not negatively affect the resulting average, but rather help positively since they reaffirm or improve skills such as the ability to work in equipment, the ability to organize and to ask others for help in case of need (Santillan, 2019).

The rapid development of various programming tools has allowed researchers to explore interactive technology targeting various areas of human knowledge. Despite the various studies on the benefits of using interactive technologies in education, it is necessary to generalize these statements through field studies that

determine how these devices facilitate and improve teaching and learning, such as the use of resources based In MS-Kinect obtained a motivational impact, effectiveness and acceptance of the teacher in the teaching and learning process (Lozada, 2018).

By its nature, the learning of certain complex contents has always been a focus of attention

and a challenge in the study of mathematics. This fact acquires greater importance if it is about the learning of children, because the psycho-cognitive skills of this type of user, especially when they attend the first levels of Basic General Education are not yet mature (Lozada,2019)

Eye strain is the most common symptom presenting discomfort, pain, and/or irritation of the eyes. These visual disorders are due to excessive exposure to PVD, which

reduces vision. Visual fatigue can occur as blurred vision, the image cannot be focused due to the lack of acuity in the vision.

Headache occurs together with VI, people do not relate it to the vision problem, for this reason, the diagnosis, and treatment of the syndrome are difficult. According to Anshel (2005), headache manifests itself in the front of the brain most often at noon and the end of the working day.

. Referring to dry eye syndrome decreases the quality and quantity of blinks to tear and protects the eye to lubricate and eliminate microorganisms that can cause damage to the ocular surface, the excess use of PVD decreases this phenomenon causes an increase in ocular grit and must be treated.

MSDs: pain in the neck, shoulders, and lower back are frequent due to the inadequate posture that the user adopts in front of PVD environment that must be evaluated and improved to prevent them.

This research aims to determine the level of computer syndrome, teleworking in the presence of Covid 19 in undergraduate and postgraduate students of the National University of Chimborazo.

Method

The present research is descriptive, exploratory of a cross-sectional type in an instant of time for data analysis. The collection of the data was done through Google Forms, the link was sent through WhatsApp Web to the groups of the subject of Industrial Safety in Undergraduate and the Master of Occupational Risk Prevention in Postgraduate de the National University of Chimborazo in several 97 people surveyed from the University. The data obtained were programmed in the SPSS V.24 program, an analysis of socio-demographic variables and the levels of visual computer syndrome (SIV) was carried out to establish correlations between the variables studied. The questionnaire is anonymous, and the confidentiality of the questionnaire was kept.

The scale of the Computer Visual Syndrome Questionnaire (CVS-Q), allows a diagnosis of users of (PVD), The CVS-Q questionnaire was designed by a committee of specialists in the study of María Seguí et al, (2015) herself Evaluates the symptoms associated with Síndrome: visual and ocular with 16 items, the same ones that are: blurred vision, double vision, difficulty focus close-up vision, increment sensitivity to light, colors around objects, feeling of seeing with difficulty, headache, burning, feeling of the presence of an object strange, tearing, blinking in excess pain of the eye, heaviness of eyelids, dry eye.

The questionnaire assesses the frequency and intensity with which each of the symptoms occurs in the person. The intensity and frequency as a product allow the calculation of the level of severity of the symptom. Finally, the sum of the level of severity of the symptoms > or equal to 6 points is defined as the person presenting the syndrome (VI).

The response options of the SVI frequency lickers scale were: 1never; 2 occasionally; 3 often or always. The response options of the ERV intensity lickers scale were: 1 never; 2 intense.

The reliability and reliability of the SVI test are done through a pilot test in which Cronbach's alpha coefficient (α) and KMO, of the entire test for frequency and intensity.

In the SPSS V24, data were collected to establish the descriptive analysis to study the frequency and intensity of the levels of the SVI of the undergraduate and graduate students at the University.

Results and Discussion

The results of the Visual Informatics Syndrome test applied to 97 undergraduate and graduate students of the National University of Chimborazo are presented below:

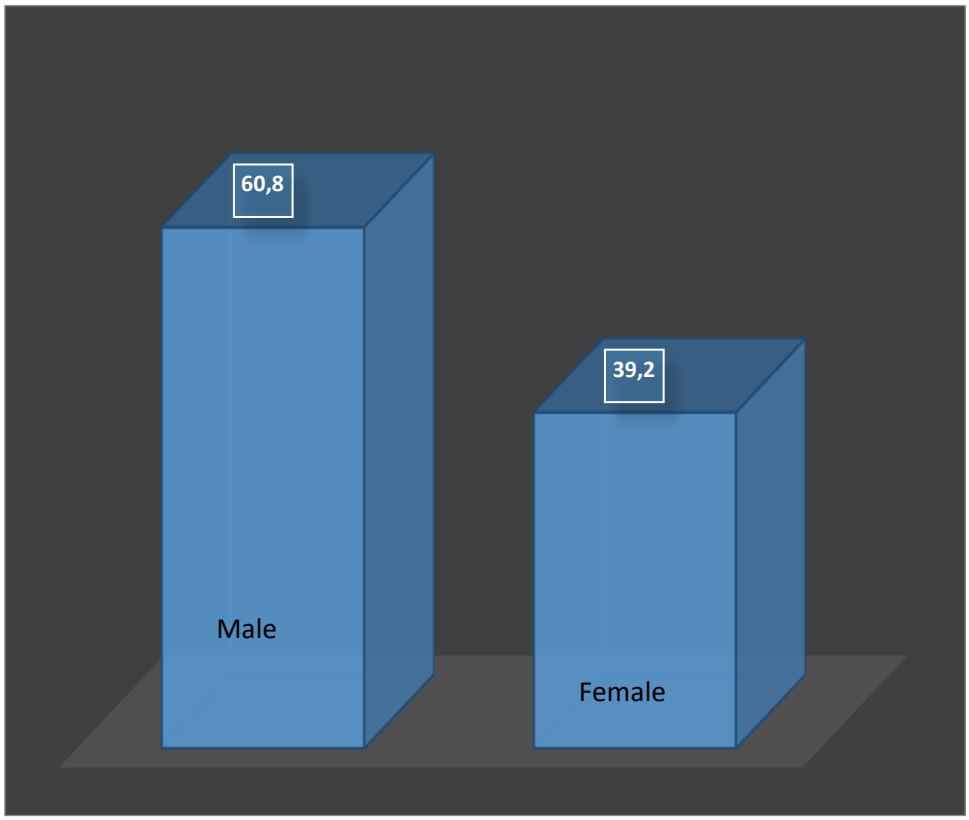


Fig. 1. Gender of Undergraduate and Graduate students surveyed.

Source: Authors

Fig. 1 referring to the gender of the undergraduate and graduate students of the UNACH surveyed we have: 60.8% are male and 39.2% are women There is a diversity of people who study at the Ecuadorian university

with strengths of preparation and improvement. The Undergraduate and Graduate students surveyed on age are presented in Fig 2.

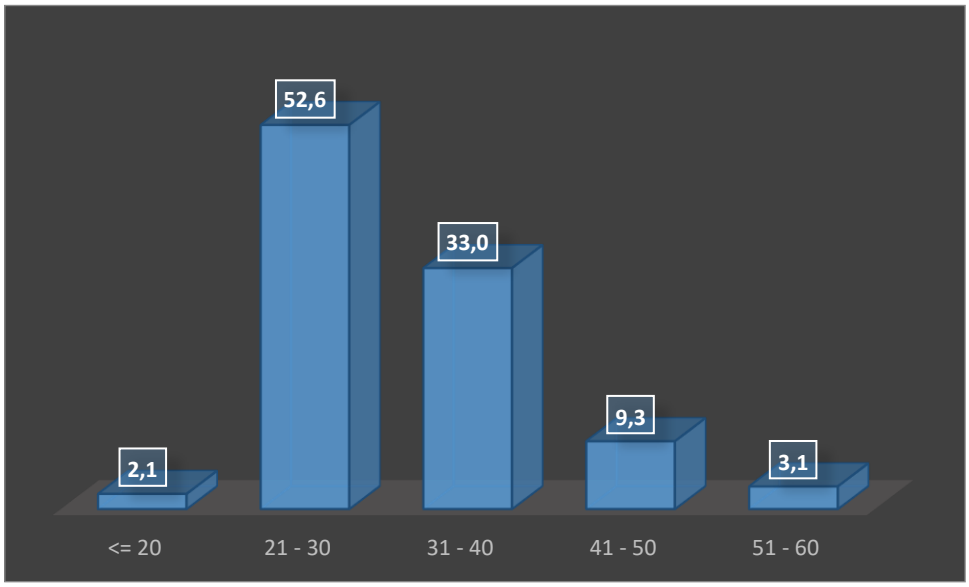


Fig. 2. Gender of Undergraduate and Graduate students surveyed.

Source: Authors

Fig. 2 referring to the age of the UNDERGRADUATE and Postgraduate students surveyed we have: 2.1% are under 20 years old; 52.6% are between 21 to 30 years old, 33% are from 31 to 40 years old, 9.3% are from 41 to 50 years old and 3.1% are from 51 to 60 years old are mostly relatively young people in the process of undergraduate and postgraduate training in the University and the subjects consulted.

Undergraduate and graduate students surveyed on marital status are presented in

Fig 3.

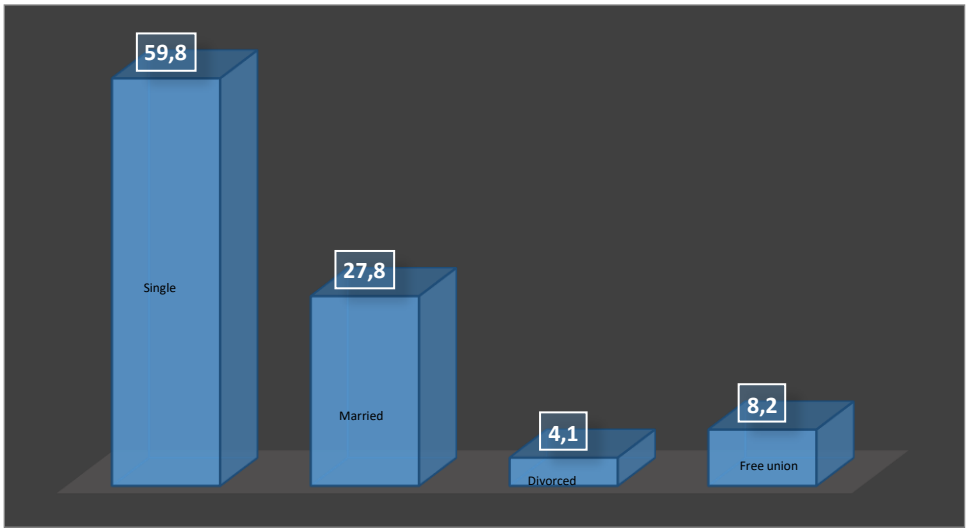


Fig. 3. Civil Status of Pre and Graduate students surveyed.

Source: Authors

Fig. 3 referring to the marital status of the undergraduate and graduate students of the UNACH surveyed we have: 59.8% are single, 27.8% married,4.1% divorced and 8.2% free union, the vast majority are people without family commitment but eager to obtain a pre and postgraduate degree for the exercise of the profession and professionalization.

Undergraduate and graduate students surveyed on the educational level are presented in Fig 4.

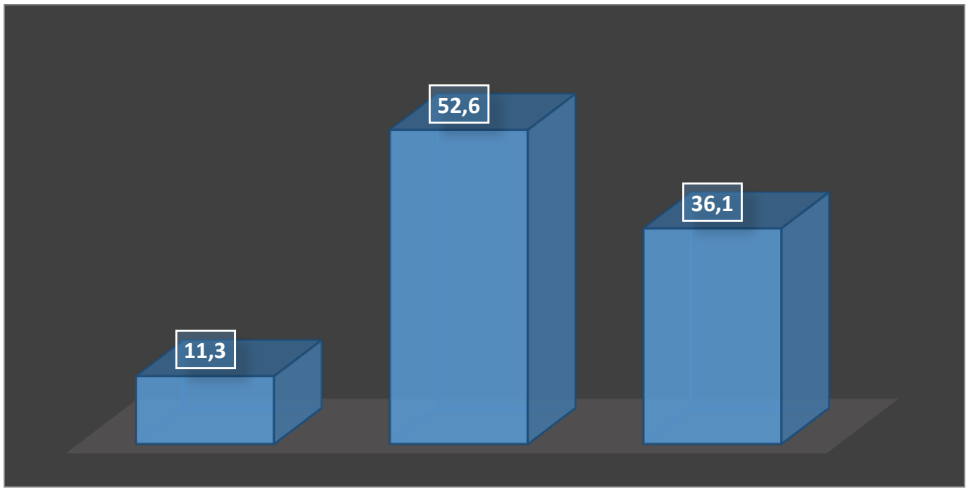


Fig. 4. The educational level of Undergraduate and Graduate students surveyed.

Source: Authors.

Fig. 4, referring to the educational level of the Undergraduate and Postgraduate students of the UNACH surveyed we have: 11.3 & secondary in the process of engineering training, 52.6% have a Professionalizing degree in the process of obtaining a master's degree and 36. 1% have Postgraduate training and by obtaining another being a level of training relevant to a new reality in search of solving country problems.

The reliability of the SVI test is established through Cronbach's Alpha and is presented in Table No. 1.

Table No. 1. Reliability of the SVI instrument of Pre and Graduate students surveyed

Alfa de Cronbach	N of elements
0.892	15

Source: Authors.

Table No. 1 presents the reliability through Cronbach's Alpha which is 0892 which is a very good instrument and can be applied in any context.

The reliability of the SVI test is established through the KMO and is presented in Table No. 2.

Table No. 2. Confibility of the SVI instrument of Pre and Postgraduate students surveyed

KMO and Bartlett test	
Kaiser-Meyer-Olkin sampling adequacy measure	0.836

Source: Authors.

Table No. 2 presents the reliability through the KMO the same that is 086 that is very good the test and can be applied in any reality.

Undergraduate and graduate students surveyed on the frequency levels of Computer Visual Syndrome are presented in Fig 5.

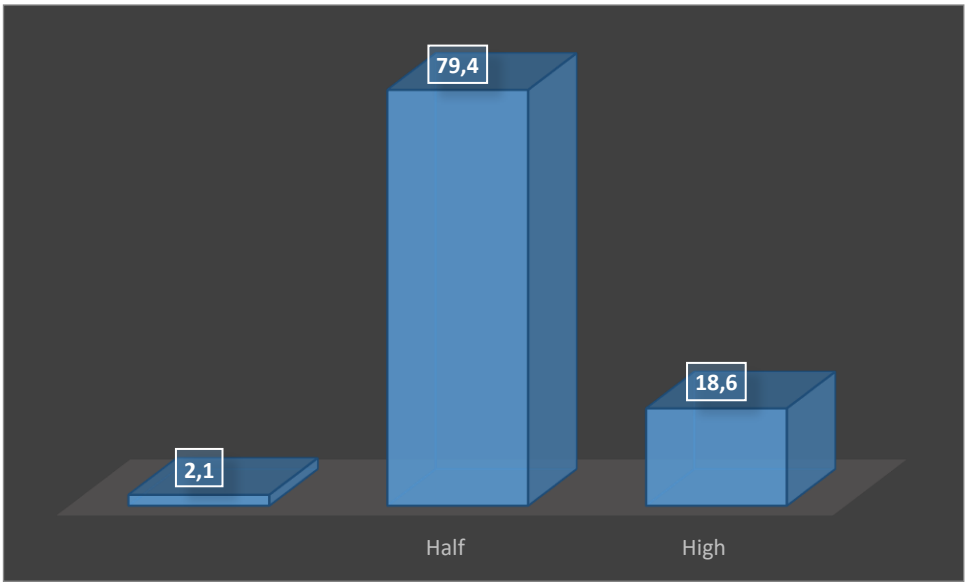


Fig. 5. The frequency level of Computer Visual Syndrome of Pre and Graduate students surveyed.

Source: Authors.

When reviewing the graph of the SVI test referring to the frequency in Pre and Postgraduate students we have: 2.1% is low, 79.4% is medium and 18.6% is high, this means that due to the presence of Covid 19, teleworking, tele-study there is a high percentage between medium and high frequency of the syndrome that can generate symptoms and lead to visual diseases, mental and physical that requires preventive measures to reduce them.

Undergraduate and graduate students surveyed on the intensity levels of Computer Visual Syndrome are presented in Fig 6.

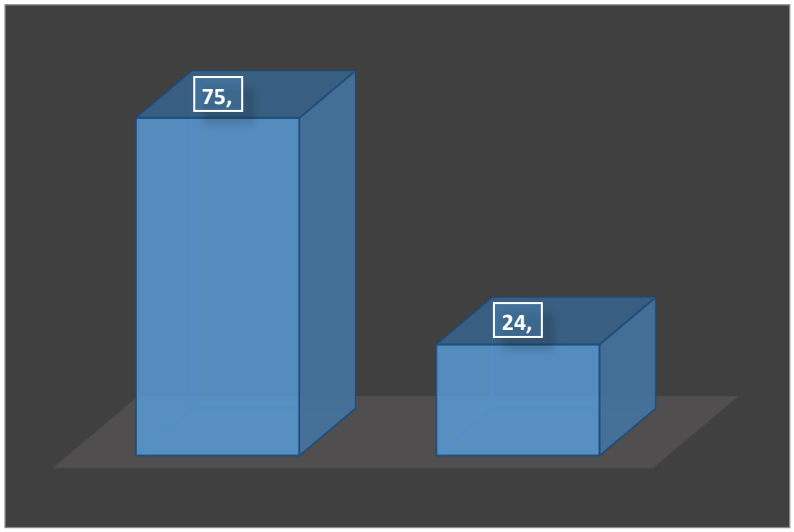


Fig. 6. Level of intensity of the Computer Visual Syndrome of Pre and Graduate students surveyed.

Source: Authors.

When reviewing the graph of the SVI test regarding the intensity in Undergraduate and Postgraduate students we have: 75.3% is moderate and 24.7% is intense, this makes it worrying since how quickly and strongly the symptoms of affectation can be presented in students and users of digital display screens.

Sociodemographic variables were established in the study to determine with the variable's frequency and intensity of the visual syndrome of the computer the correlations between them in the study.

The correlation between the Gender of the Undergraduate and Graduate students surveyed vs the frequency of Computer Visual Syndrome is presented in Fig 7.

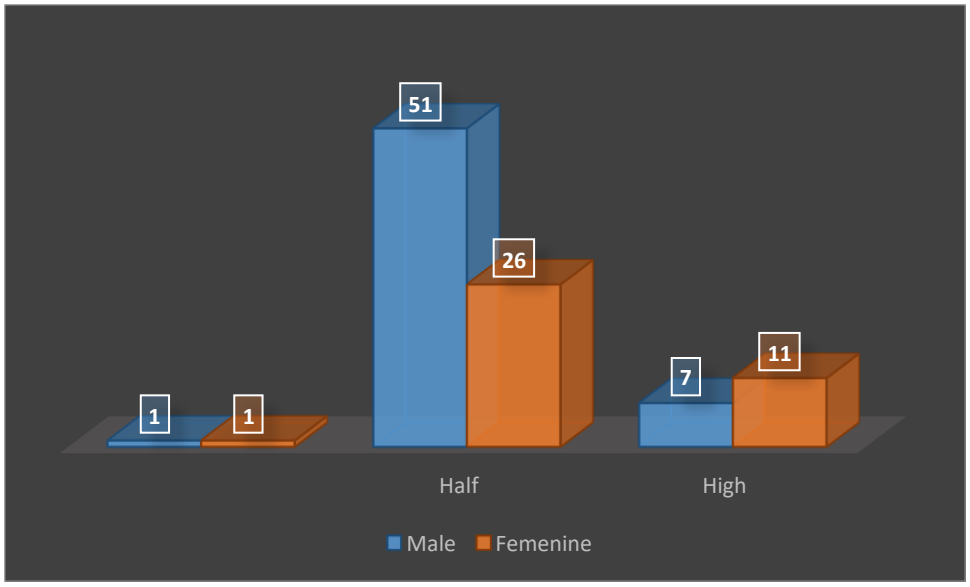


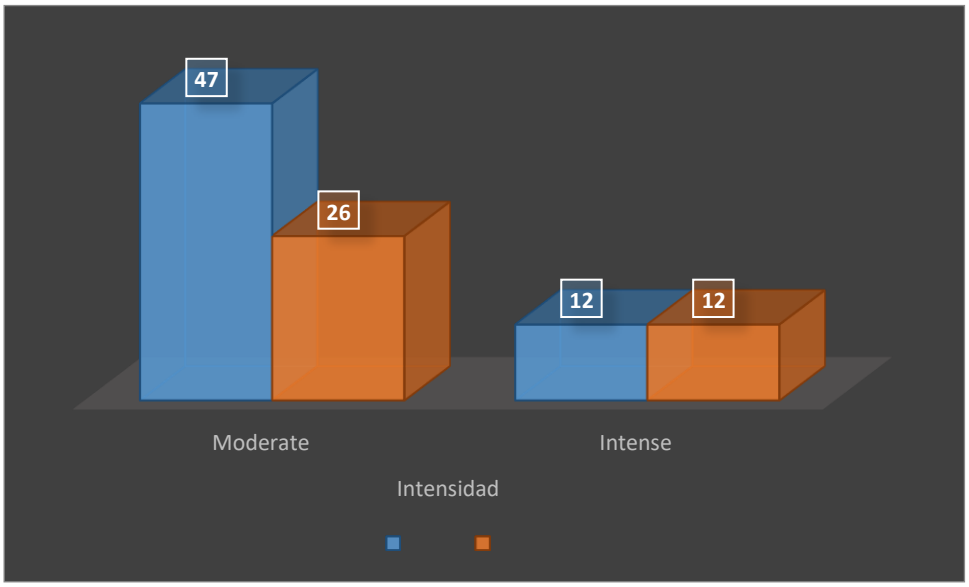
Fig. 7. Correlation between Gender vs frequency of Computer Visual Syndrome of Pre and Graduate students surveyed.

Source: Authors.

When establishing the correlation between the gender of undergraduate and graduate students with the frequency of Computer Visual Syndrome through Cramer's V is 0.220 which means that there is an allow relationship between the two variables, referring to the number of cases on average there are more men and in high more women. The syndrome presents differently regardless of gender.

The correlation between the Gender of the Undergraduate and Graduate students surveyed vs the intensity of the Computer Visual Syndrome is presented in Fig 8.

Fig. 8. Correlation between Gender vs Frequency of Computer Visual Syndrome of Pre and Graduate Students Surveyed



Source: Authors.

When establishing the correlation between the gender of undergraduate and graduate students with the intensity of the Computer Visual Syndrome through Cramer's

V is 0.127 which means that there is a low relationship between the two variables, as moderate intensity is present more in men than in women, on the contrary, there is equal in the intense part of the syndrome.

The correlation between the Marital Status of the Undergraduate and Graduate students surveyed vs the frequency of Computer Visual Syndrome is presented in Fig 9

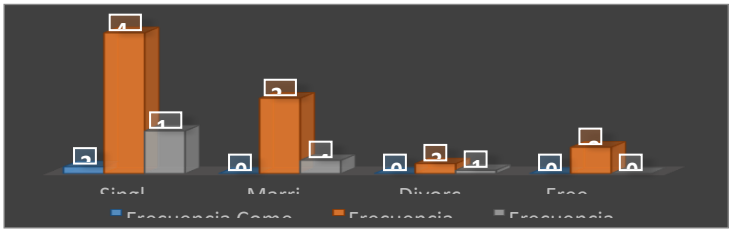


Fig. 9. Correlation between Marital Status vs Frequency of Computer Visual Syndrome of Pre and Graduate Students Surveyed

Source: Authors.

The correlation between the marital status and the frequency of the Computer Visual Syndrome by Cramer V is 0.150 the relationship is low between the variables there is no influence between them for the investigated phenomenon, referent in all civil states the average frequency is the one that predominates the most and in the case of single and married marital status in high frequency presents the highest number of cases. The correlation between the Marital Status of the Undergraduate and Graduate students surveyed vs the intensity of the Computer Visual Syndrome is presented in Fig. 10.

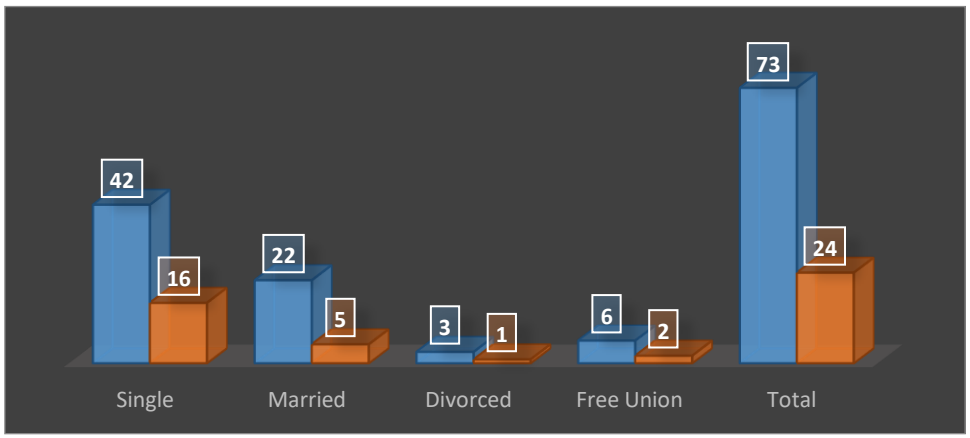


Fig. 10. Correlation between Marital Status vs Intensity of Computer Visual Syndrome of Pre and Graduate Students Surveyed

Source: Authors.

The correlation between the marital status and the intensity of the Computer Visual Syndrome of the students of Pre and postgraduate of the University the V of Cramer is 0.092 which indicates that it is low has no relationship between the two variables, referring to the intensity it is determined that in all the civil states the highest percentage is the moderate intensity compared to the high is lower.

The correlation between the Educational Level of the Undergraduate and Graduate students surveyed vs the frequency of Computer Visual Syndrome is presented in Fig 11.

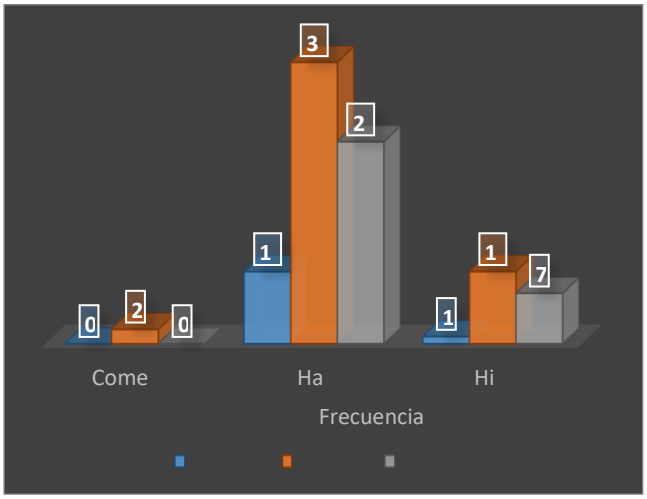


Fig. 11 Correlation between Educational Level vs Frequency of Computer Visual Syndrome of Pre and Graduate Students Surveyed. Source: Authors.

The correlation between the Educational Level and the frequency of the Computer Visual Syndrome of the students of Pre and postgraduate of the University the V of Cramer is 0.117, which indicates that it is low has no relationship between the variables, referring to the frequency of students who have the third level is higher in percentage compared to those of postgraduate.

The correlation between the Educational Level of the Undergraduate and Graduate students surveyed vs the intensity of the Computer Visual Syndrome is presented in Fig. 12.

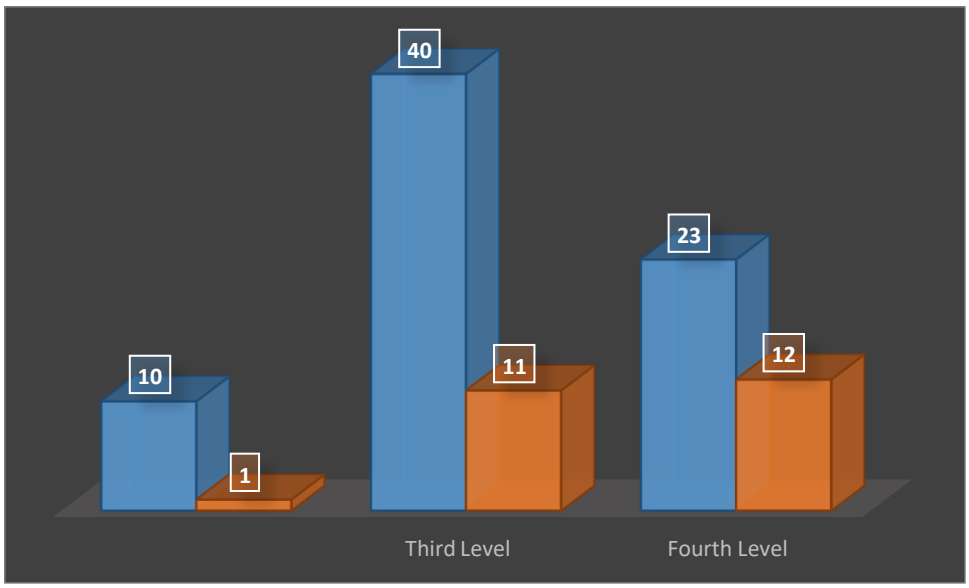


Fig. 12 Correlation between Educational Level vs. Intensity of Computer Visual Syndrome of Pre and Graduate Students Surveyed

Source: Authors.

The correlation between the Educational Level and the intensity of the Computer Visual Syndrome of the students of Pre and postgraduate of the University, the V of Cramer is of 0.188, which indicates that it is low has no relationship between the variables, referring to the frequency the students is moderate in all the levels in percentage is greater compared to the high intensity in the same analysis.

Conclusions

The test of the SVI through Cronbach's Alpha and KMO was determined in the study the validity of content by evaluating the questionnaire using the SPSS V24 giving acceptable values that allow this instrument to be applied as applied in another context.

The CVS-Q instrument demonstrated the levels of frequency and intensity that the test assesses to determine exposure to risk factors for SVI, allows to propose preventive

measures such as reducing the level of use of digital display screens, administrative measures that better organize the work by undergraduate and graduate students of the National University of Chimborazo.

In the present study, it was verified the little relationship that exists between the sociodemographic variables with the SVI so that they do not affect depends on the intensity and frequency of the use of the computer or factors such as hereditary of the person or that the vision is lost by the age of the person or by an inappropriate lifestyle such as alcohol consumption, tobacco, not doing sports, poor diet among other factors that influences and the person so it is recommended to apply an analysis through the Fantastic test to evaluate this type of life behavior of students.

The SVI test can be applied in work environments and by health professionals to determine the prevalence of VI, symptoms, and timely referral to the specialty of ophthalmology, for an eye health program, according to the levels detected and the items answered greater than 6. assess the effectiveness of the interventions developed as preventive measures.

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