



ORIGINALES

The meaning of life as a mediator between self-esteem and Internet addiction in adolescents

El sentido de la vida como mediador entre la autoestima y la adicción al internet en adolescentes

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<https://doi.org/10.6018/eglobal.482691>

Received: 7/06/2021

Accepted: 17/07/2021

ABSTRACT:

Introduction: Internet addiction has been associated with self-esteem, and the meaning of life with both variables because its mediating role should be explored.

Objective: To analyze the relationship between Internet addiction and self-esteem in Mexican adolescents.

Methodology: A descriptive and correlational study was carried out with a sample of 238 students selected by non-probability convenience sampling. A personal data card, the Rossemberg self-esteem scale, the Internet addiction test and the meaning of life test were used. The study adhered to the provisions of the Regulations of the General Health Law on Research for Health in Human Beings in Mexico and the declaration of Helsinki.

Results: Internet addiction was negatively and significantly related to the meaning of life ($r_s = -.359$, $p \leq .001$) and with self-esteem ($r_s = -.426$, $p \leq .001$). The meaning of life showed a mediating effect between self-esteem and Internet addiction ($B = -.188$, $SE = .066$, $95\% \text{ CI } [-.320, -.056]$). Sex had a moderating effect between self-esteem and Internet addiction, being significant in both sexes.

Conclusion: Self-esteem and meaning of life can predict a decrease in Internet addiction. Likewise, the role of gender can present variations with respect to points of view and way of thinking and moderate the relationship between self-esteem and Internet addiction.

Keywords: Adolescent; Internet addiction; Self-esteem; Purpose in life; Mediation; Moderation.

RESUMEN:

Introducción: La adicción al Internet se ha relacionado con la autoestima, y el sentido de la vida con ambas variables, porque se debe explorar su rol mediador.

Objetivo: Analizar la relación entre la adicción al Internet y la autoestima en adolescentes mexicanos.

Metodología: Se efectuó un estudio descriptivo y correlacional con una muestra de 238 estudiantes seleccionados por muestreo no probabilístico por conveniencia. Se utilizaron una cédula de datos personales, la escala de autoestima de Rosseberg, el test de adicción al Internet y el test de sentido de la vida. Se apegó a lo dispuesto en el Reglamento de la Ley General de Salud en Materia de Investigación para la Salud en Seres Humanos en México y a la declaración de Helsinki.

Resultados: La adicción al Internet se relacionó negativa y significativamente con el sentido de la vida ($rs=-.359$, $p= <.001$) y con la autoestima ($rs=-.426$, $p=<.001$). El sentido de la vida mostró un efecto mediador entre la autoestima y la adicción al Internet ($B= -.188$, $SE= .066$, 95% IC [-.320, -.056]). El sexo tuvo un efecto moderador entre la autoestima y la adicción al Internet siendo significativo en ambos sexos.

Conclusión: La autoestima y el sentido de la vida pueden predecir una disminución de la adicción al Internet. Así mismo, el rol de género puede presentar variaciones con respecto a los puntos de vista y forma de pensar y moderan la relación entre la autoestima y la adicción al Internet.

Palabras clave: Adolescente; Adicción al Internet; Autoestima; Sentido de la vida; Mediación, Moderación.

INTRODUCTION

The self-esteem has been defined according to Rosenberg as "the global, favorable or unfavorable attitude that the individual has towards himself" ⁽¹⁾. Bonet cited in Borges Silva ⁽²⁾ defines it as the perceptions, thoughts, evaluations, feelings and behavioral tendencies directed towards ourselves, our way of being and behaving and the traits of our body and our character, based on such as the ability to develop confidence and respect for oneself.

Having an optimal level of self-esteem can be considered as a protective factor against unhealthy influences, such as an addiction to substances or behaviors ⁽³⁾. During the early adolescence, a decrease in self-esteem levels may occur, but this can be recovered in the years thereafter, especially in men, since women tend to have low levels during most of adolescence ⁽⁴⁾.

The need to feel valuable, able to accept themselves and to use their own abilities is important for adolescents. This will allow them to face adverse situations. In contrast, inadequate self-esteem followed by stagnant consideration and a lack of hope for an improvement of the adverse situations increases the risk of developing addictive or other risky behavior ⁽⁵⁾. In addition to the fact that adolescence is considered a period of instability and search for role models, in order to define their adult personality in the future ⁽⁶⁾.

Adolescents are the main users of the Internet. Deprived of sleep due to an obsessive practice of this type of communication, they often manifest symptoms of

depression, sleep problems, poor performance in school, isolation, anxiety and self-esteem problems. Over time, it can become uncontrolled use, leading the user to develop an addiction and a psychological dependence that can cause discomfort when they are not online or connected to the Internet ⁽⁸⁾.

The relation between self-esteem and Internet addiction has been studied ⁽⁹⁾ but there is controversy as to whether self-esteem is the cause or the effect ⁽⁷⁾ For this study, it is hypothetically considered that (low) self-esteem has a direct effect on Internet addiction. In addition, the relation between sex differences and self-esteem levels is considered, with lower self-esteem among women ⁽¹⁰⁾. Therefore, this sociodemographic variable is considered to explore its possible moderating effect on the relation between self-esteem and Internet addiction.

Another variable that is considered is the meaning of life, which is defined as a constant force that motivates the human being to live and when this lack is considered as an existential void or frustration. When people lose this sense of life, they try and hope to fill it with external things like an addiction ⁽¹¹⁾.

A strong association has been shown between the meaning of life and self-esteem ($r=0.59$; $p < 0.010$), as well as in regression coefficients where the predictive value of the meaning of life for self-esteem is shown ($\beta = 0.548$). Both variables tend to protect people against the harmful effects of adaptive challenges, making it relevant for understanding individual differences in the face of adversity ⁽¹²⁾.

Likewise, a relation between addictive behavior and the perceived meaning of life has been suggested ⁽¹³⁾. Therefore, the meaning of life has been associated with both variables. In this study is intended to explore its mediating role in this relation. This role has already been suggested to be studied for various mental disorders or addictive behaviors ⁽¹⁴⁾, but the evidence is still scarce, so this study pretends to provide new knowledge to be considered in clinical interventions.

OBJECTIVE

The purposes of this study were to explore the relation between Internet addiction and self-esteem in a sample of Mexican adolescents who were studying basic (middle school) and upper middle school (high school) studies; analyze the possible mediating effect of the meaning of life on the relation between self-esteem and Internet addiction and explore the moderating effect of sex on the relation between self-esteem and Internet addiction, between self-esteem and the meaning of life, and between the meaning of life and Internet addiction.

MATERIAL AND METHODS

Study design

The study design is descriptive and correlational. Self-esteem, Internet addiction and the meaning of life in Mexican adolescents were described and the relation between these variables was determined ⁽¹⁵⁾ as well as its possible mediating and moderating effects ⁽¹⁶⁾.

Population, sample and sampling

The sample was composed of 238 participants (55% men) between 11 and 20 years ($\bar{x}=14.92$, $DE= 1.9$) who were studying the basic level of education (42% middle school) and upper middle school (58% high school) in a public school in the Port of Veracruz, Mexico. 63.9% lived with both parents and the marital status of 100% of the sample was single (Table 1). The sample selection method was non-probabilistic for convenience. Students who did not attend the day of the application of the instruments were excluded ⁽¹⁵⁾.

Table 1. Sociodemographic Data.

| Characteristics | f | % |
|---------------------|-----|------|
| Sex | | |
| Men | 131 | 55.0 |
| Woman | 107 | 45.0 |
| Age | | |
| 11 to 14 years | 94 | 39.5 |
| 15 to 17 years | 132 | 55.5 |
| 18 years and older | 8 | 5 |
| School grade | | |
| Middle School | 100 | 42.0 |
| High School | 138 | 58.0 |
| Lives with | | |
| Both parents | 152 | 63.9 |
| Father | 13 | 5.5 |
| Mother | 55 | 23.1 |
| Some family | 18 | 7.6 |

Note: f= Frequency, %= Percentage

Instruments

The sociodemographic variables were obtained through direct questions about age, sex, educational level, who currently lives with and marital status. The Rosenberg Self-Esteem Scale (RSS) was used to assess self-esteem ⁽¹⁷⁾. This scale consists of 10 items in a 4-point Likert type response format, with a range that fluctuates from 1 “strongly agree” to 4 “strongly disagree”. Five of the items are written positively and five negatively. The responses of the items 1 to 5 are scored from 4 to 1 and items from 6 to 10, from 1 to 4. In this way, the total score of the scale fluctuates in a range from 10 to 40. Cut-off points are 30 to 40 (high or normal self-esteem), 26 to 29 (medium self-esteem), and less than 25 (low self-esteem). The RSS presents adequate psychometric properties in terms of reliability (internal consistency $\alpha = .86$), as well as an essentially one-dimensional structure. This scale has the objective of assessing the sense of satisfaction that the person has with himself.

To assess Internet addiction (IA), the Internet Addiction Test (IAT) was used in its version adapted to Spanish ⁽¹⁸⁾. It is composed of 20 items with five-point Likert type responses ranging from 1, rarely, to 5, always. The items cover different aspects of daily life that can be affected by the use of the Internet. Cohort points are suggested according to the scales from 0 to 30 (normal), from 31 to 49 (mild addiction), from 50 to 79 (moderate addiction) and from 80 to 100 (severe addiction). The test measures the degree of participation of a person with the computer and classifies addictive behavior in terms of mild, moderate, and severe impairment. In this study, the reliability index was calculated by analyzing the internal consistency of Cronbach's alpha, reporting an index of 0.86 that is considered acceptable ⁽¹⁵⁾.

In order to measure the meaning of life, "Purpose in Life" Test was used ⁽¹⁹⁾. It is an attitude scale built from the orientation of logotherapy. The instrument consists of three parts. For this study, only the first part was used, since the second and third are for qualitative information for clinical interpretation. It consists of 20 items with a Likert type response (scale from 1 to 7), in which all the items are added to find the total score. The score obtained from the PIL indicates the presence or lack of meaning of life. The minimum score is 20 points and the maximum are 140. The cut-off points are for a score below 90 that indicates existential emptiness, a score between 91 and 105 indicates a lack of definition of meaning and a score above 106 indicates the presence of goals and meaning of life. In this study, a Cronbach's alpha coefficient of .90 was obtained.

Procedure

In order to carry out this study, a middle school was visited to speak with the managements and explain them the objectives of the study (this study was the preliminary phase of an intervention project). After approval by the authorities, the adolescents were given an informed consent for their parents to sign and give authorization to participate in the study. When the signed consents were obtained, the school was again attended on the scheduled date for the application of the instruments. For that purpose, the students were attended in their classrooms and after explaining the purpose and characteristics of the study, they were asked to sign a consent to participate. The instruments were given to them in printed form, which they responded in a period of 8 to 10 minutes. Once this was concluded, they were thanked for their participation.

Ethical considerations

This research adhered to the provisions of the Regulations of the General Health Law on Research for Health in Human Beings in Mexico ⁽²⁰⁾. The Second Title of the ethical aspects of research in human beings was considered, chapter I, Article 13, 14, 16, 17, 20, 21, 36, 57 and 58. In addition, the ethical principles for medical research on human beings of the Declaration of Helsinki were considered ⁽²¹⁾.

Data analysis

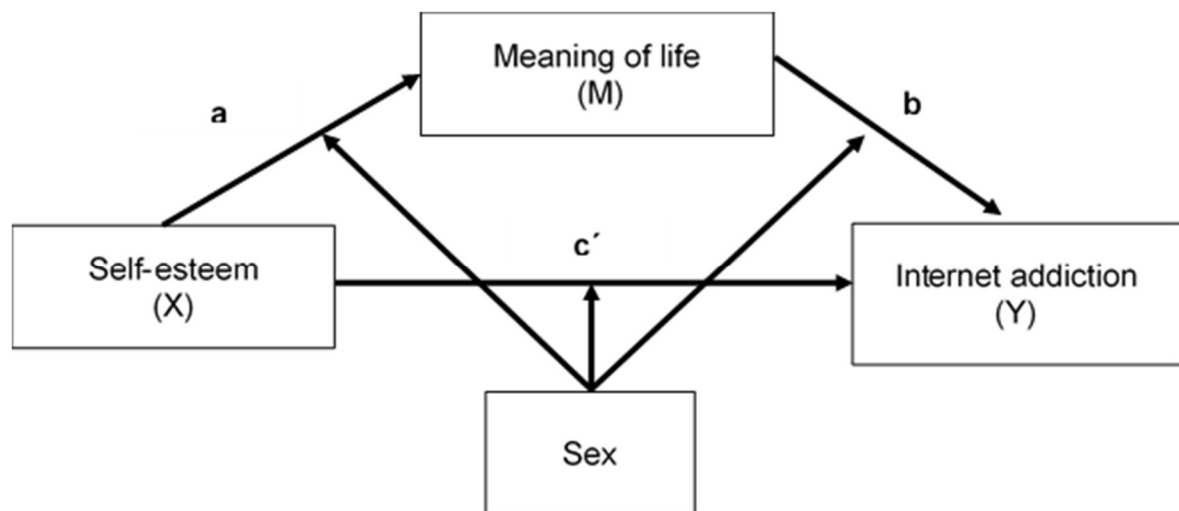
In order to respond to the proposed objective, the following analyzes were carried out.

Firstly, the sociodemographic data of the participants were described, as well as the levels of Internet addiction, self-esteem and meaning of life.

Secondly, in order to analyze the relation between Internet addiction, self-esteem and the meaning of life, the normality of the sample was examined using the Kolmogorov-Smirnov test and the type of analysis to be used was determined (the sample did not showed normality, $p < .05$); Subsequently, the relation between Internet addiction, self-esteem and the meaning of life was analyzed using the Spearman correlation coefficient.

In order to examine the mediating and moderating effects, the model was established according to the templates proposed by Hayes ⁽¹⁶⁾ using in the first instance model 59 in which it is established as an independent variable (VI) to the self-esteem (X), the dependent variable (DV), Internet addiction (Y) and as a moderating variable the meaning of life (M); in addition, the possible moderating role of the sociodemographic variable of sex (W) is considered in the relationship between self-esteem (X) and Internet addiction (Y) in the relation of self-esteem (X) and the meaning of life (M), and in the relation between the meaning of life (M) and internet addiction (Y), having a hypothetical model of these effects (Fig. 1).

Figure 1: Hypothetical model of direct, mediator and moderator effects.



Note: X= independent variable, Y= dependent variable, M= mediating variable, a= effect from X to M, b= effect from M to Y, c'= effect from X to Y.

In order to carry out the mediation and moderation analyzes; the macro PROCESS was used ⁽¹⁶⁾. In order to estimate the significance of the indirect effect, Bootstrapping (10,000 resamples) was used with a 95% confidence interval. It is established that the effect is significant if the associated confidence interval does not contain zero. Data analyzes were carried out with the statistical program SPSS v22⁽²²⁾ and the macro PROCESS ⁽¹⁶⁾.

RESULTS

Variables description

According to descriptive analyzes (Table 2), most of the population has high self-esteem (55%). In the same way, they present a mild Internet addiction (68.1%), even though there is a severe addiction (2.1%). Regarding the meaning of life, the population shows a high percentage of lack of meaning (89.1%).

Table 2: Levels of study variables

| Variable | f | % |
|---------------------------|------------|------------|
| Self-esteem | | |
| High | 131 | 55.0 |
| Average | 68 | 28.6 |
| Low | 39 | 16.4 |
| Total | 238 | 100 |
| Internet Addiction | | |
| Mild | 162 | 68.1 |
| Moderate | 71 | 29.8 |
| Severe | 5 | 2.1 |
| Total | 238 | 100 |
| Meaning of life | | |
| Presence of goals | 0 | 0 |
| Indefiniteness | 26 | 10.0 |
| Lack of meaning | 212 | 89.1 |
| Total | 238 | 100 |

Note: f= Frequency, %= Percentage

Relationship between study variables

Descriptive data (Table 3) of each of the variables are presented, as well as the correlations showing that Internet addiction is related to the meaning of life ($r_s = -.359$, $p < .001$) and with self-esteem ($r_s = -.426$, $p < .001$), and the meaning of life with self-esteem ($r_s = .471$, $p < .001$).

Table 3: Descriptive data and relationships between variables

| Variable | \bar{X} | SD | 1 | 2 | 3 |
|--------------------|-----------|------|--------|-------|---|
| Internet addiction | 34.2 | 15.1 | 1 | | |
| Meaning of life | 73.4 | 15.3 | -.359* | 1 | |
| Self-esteem | 30.0 | 4.5 | -.426* | .471* | 1 |

Note: \bar{X} = Media, SD= Standard Deviation, * $p < .001$

Internet addiction and self-esteem: mediating role of meaning of life

The mediation analysis (Table 4) showed that the total effect of self-esteem towards Internet addiction was negative and statistically significant ($B = -1.039$, $p < .001$, 95% CI [-1.48, -.59]) In the same way, self-esteem has a positive and significant effect on the meaning of life ($B = 1.67$, $SE = .0192$, 95% CI [1.295, 2.051]), which was theoretically expected. The effect of the meaning of life towards Internet addiction is negative and significant ($B = -.188$, $SE = .066$, 95% CI [-.320, -.056]), which indicates that by having more satisfaction with life the adolescent is less likely to be addicted

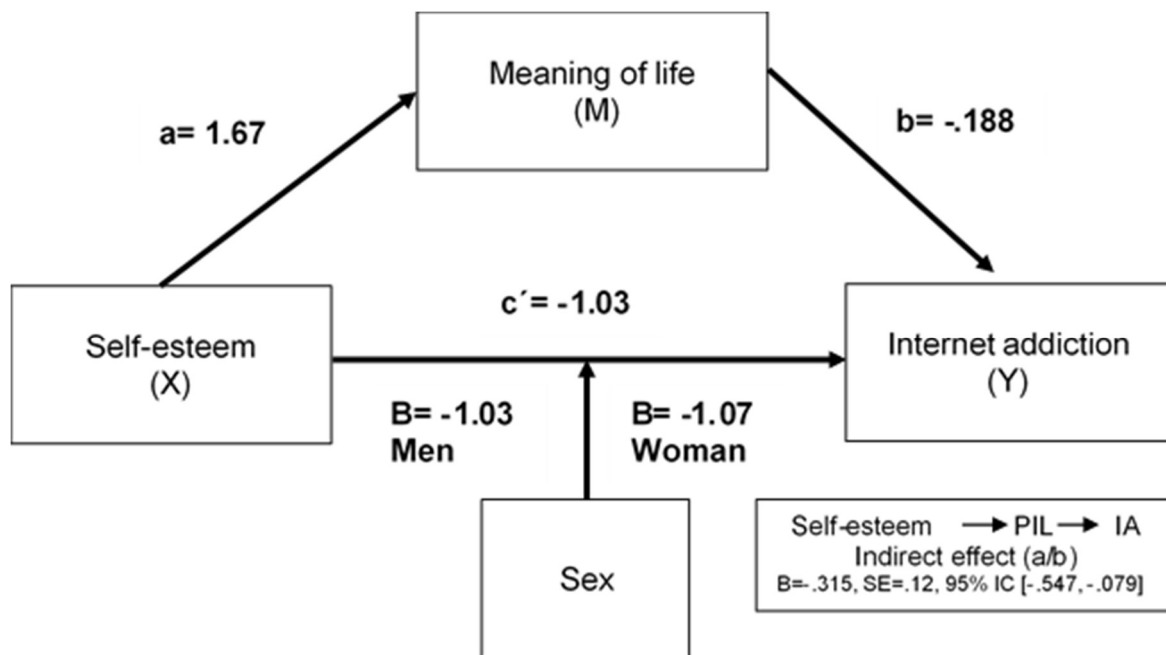
to the Internet- Likewise. The indirect effect is presented (Fig. 2), which is negative and statistically significant ($B = -.315$, $SE = .1202$, 95% CI $[-.547, -.079]$), indicating that there is a mediating effect of the meaning of life between self-esteem and Internet addiction.

Table 4: Mediation model

| | | Meaning of life (M) | | | Internet addiction (Y) | | | |
|----------------------------|----------------|---------------------|-------|--------|------------------------|-------|------|--------|
| | | Coeff | SE | p | Coeff | SE | p | |
| Self-esteem (X) | a | 1.673 | 0.192 | <0.001 | c' | -1.03 | 0.22 | <0.001 |
| Meaning of life (M) | | -- | -- | -- | b | -.188 | 0.06 | 0.005 |
| Constant | i ₁ | 23.13 | 5.83 | <0.001 | i ₂ | 79.32 | 6.19 | <0.001 |
| $R^2=0.24$ | | | | | $R^2=0.19$ | | | |

Note: Coeff= Unstandardized coefficients, SE= Standard Error, p= Significance, R^2 = Total explained variance

Figure 2: Final model with direct, mediating and moderating effects



Note: PIL= Meaning of life, IA= Internet Addiction.

Internet addiction and self-esteem: the moderating role of sex

The moderation analysis (Table 5) showed that the effect of self-esteem is statistically significant in men ($B = -1.03$, $p < .05$) and women ($B = -1.07$, $p < .05$) showing a slightly greater effect in women; that is, the effect of self-esteem in women is higher. When self-esteem is greater, the probability that Internet addiction will decrease in women is greater. Regarding the moderation of the relation between self-esteem and the meaning of life, and between this and Internet addiction, the moderating effect of sex was not significant.

Table 5: Moderating effect of sex

| Variable | Effect | SE | t | p | 95% CI |
|----------|--------|------|-------|------|---------------|
| Men | -1.03 | .299 | -3.44 | <.05 | [-1.62, -.44] |
| Woman | -1.07 | .315 | -3.41 | <.05 | [-1.69, -.45] |

Note: SE= Standard Error, p= Significance, t= Student's t test, CI= Confidence intervals

DISCUSSION

This research had three main purposes. The first was to explore the relation between self-esteem and Internet addiction, according to the results obtained, a negative and significant relation between these variables is confirmed. These results coincide with other studies ^(7-8, 23-24) that indicate that low self-esteem is a fundamental factor for the development or not of Internet addiction and other addictive behaviors that can be of potential risk for adolescents and if not modulated could bring greater problems.

In relation to the second purpose: to analyze the possible mediating effect of the meaning of life in the relation between self-esteem and Internet addiction, this effect was verified in this research. However, no similar studies were found that analyzed this type of effect of the meaning of life on these two variables, but its mediating effect with depression and hopelessness has been studied ⁽¹⁴⁾. The results obtained provide an explanation of the phenomenon of Internet addiction and it is directly influenced by self-esteem and meaning of life, these variables acting as protective factors that can help to reduce this behavior. The role of protective factor of the meaning of life coincides with other research ⁽²⁵⁾.

A positive relation was also shown between self-esteem and meaning of life. Together, these factors tend to protect people from the negative effects of any harmful behavior, and they can also contribute to positive and healthy behaviors in adolescents ⁽¹²⁾.

The third purpose was to explore the moderating effect of sex on the relations between self-esteem and Internet addiction; self-esteem and meaning of life, and meaning of life and Internet addiction. The moderating effect of sex on the relation between self-esteem and Internet addiction was confirmed; in the other relations they were not significant. This effect was slightly higher in women. For this type of outcome, no similar studies were identified with these variables. However, there are researches that have shown the moderating effect of sex on the relation between personality and psychological well-being ⁽²⁶⁾ and between attitudes towards communication, emotional intelligence and empathy ⁽²⁷⁾. Both studies showed that women have higher scores, that's consistent with this research. In addition, the authors emphasize the importance of knowing how the variables behave depending on sex. This could help to better understand that each phenomenon occurs differently and that sex is a factor that moderates the positive or negative effect of a behavior.

Regarding the level of self-esteem and its variation according to sex, a slightly higher variation was found in women than men, contrary to that reported by Moreno and Marrero ⁽²⁸⁾ but similar to that presented by Aznar ⁽²⁹⁾ and Games-Medina ⁽³⁰⁾. These variations may be due to the context in which they live and the variables

studied. For this reason, it is important to carry out more studies that analyze this type of effect of the variables.

One of the limitations of this research was the cross-sectional design, which makes it impossible to make causal considerations. Longitudinal studies are necessary to establish variations in the effects presented over time. Non-probability sampling and sample size limit the results so they cannot be generalized; It is advisable to replicate this type of study in larger populations and with probabilistic sampling. In the same way, it is necessary for a greater number of researchers to carry out this type of study in order to contribute new knowledge regarding the behavior of the variables and thus achieve a greater understanding of the current phenomena that occur every day with the new generations.

CONCLUSION

According to the results of this study, it can be concluded that Internet addiction is a phenomenon that occurs more frequently in adolescents, probably due to free time they have or in some cases the lack of parental supervision. Based on the results, it can be affirmed that self-esteem is a factor that can help reduce Internet addiction and that the meaning of life acts as a mediator between these variables, which can help to enhance the effect of self-esteem in addiction problems.

Likewise, sex is a factor that presents variations with respect to the points of view, ways of thinking and acting with respect to the sociocultural context that is lived and according to what is exposed in this research, sex can moderate the relation between self-esteem and Internet addiction, so it is essential to bear these differences in mind for the cultural adaptations of the interventions, and in some occasions this factor is not considered as a determining factor to achieve a better result. It is essential to consider these differences for the cultural adaptations of the interventions, since in some occasions this factor is not considered decisive to achieve a better result.

The present study presents contributions to nursing practice such as the inclusion of the meaning of life variable and the differentiation of activities by sex for a better result in the interventions. Likewise, the variables studied in this research and the mediating and moderating effects should be considered for future interventions and health promotion programs aimed at reducing said behavior.

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ISSN 1695-6141

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