

## Research article

Medwave 2017 Ene-Feb;17(1):e6857 doi: 10.5867/medwave.2017.01.6857

# Frequency of Internet addiction and development of social skills in adolescents in an urban area of Lima

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**Citation:** Zegarra Zamalloa CO , Cuba Fuentes MS . Frequency of Internet addiction and development of social skills in adolescents in an urban area of Lima. *Medwave*2017 Ene-Feb;17(1):e6857 doi: 10.5867/medwave.2017.01.6857

**Submission date:** 11/10/2016

**Acceptance date:** 11/1/2016

**Publication date:** 30/1/2017

**Origin:** not requested

**Type of review:** reviewed by two external peer reviewers, double-blind

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**Key Words:** adolescent, social behavior, internet

## Abstract

### OBJECTIVES

To determine the frequency of Internet addiction and its relationship with the development of social skills in adolescents in the town of Condevilla, district of San Martín de Porres, Lima - Peru.

### METHODS

The degree of social skills and level of internet use was evaluated in adolescents from 10 to 19 years of 5th to 11th grades in two secondary schools in the town of Condevilla. Classrooms were randomly selected, and the questionnaires were applied to all adolescents. Two questionnaires were applied: Scale for Internet Addiction of Lima to determine the extent of Internet use, and the Social Skills Test from the Ministry of Health of Peru, which evaluates self-esteem, assertiveness, communication and decision-making. The analyses by Chi<sup>2</sup> test and Fisher's exact test, as well as a generalized linear model (GLM) were performed using the binomial family.

### RESULTS

Both questionnaires were applied to 179 adolescents, of whom 49.2% were male. The main age was 13 years, 78.8% of which were in secondary school. Internet addiction was found in 12.9% of respondents, of whom the majority were male (78.3%,  $p = 0.003$ ) and had a higher prevalence of low social skills (21.7%,  $p = 0.45$ ). In multivariate analysis, the independent factors associated with Internet addiction were gender ( $p = 0.016$ ) and to have low social skills compared to high social skills ( $p = 0.004$ ).

### CONCLUSIONS

In adolescents, there is a relationship between internet addiction and low social skills, among which the area of communication is statistically significant.

## Introduction

The use of internet and new technologies has been increasing steadily in our country and the world since its appearance, especially in the last ten years. In the National Household Survey 2012, prepared by the National Institute of Statistics and Informatics [1], among different population groups, the young population (19-24 years) and the adolescents (10-19 years old), are the ones with the highest rate of Internet use (67.2% and 64.2%, respectively).

Young [2] defines Internet addiction as the "deterioration in control of Internet use manifested as a set of cognitive, behavioral and physiological symptoms". Internet addiction does not currently fall within the new classification of diseases DSM-5 because it is a relatively new phenomenon with still unclear definitions and not well studied. Thus, the same panel of experts invites to further research in this subject so that a subsequent edition of the classification can consider it.

Some studies have reported on internet addiction in the general population, specially adolescents and young people. In 1999, Greenfield reported 6% prevalence in 17,251 subjects evaluated [3]. Weinstein and Lejoyeux published a review of studies conducted between 2000 and 2009 in the United States and Europe, which found a prevalence between 1.5% and 8.2% [4]. However, other series of Asian countries reported prevalence of 20.3% and 37.9% in Korean populations [5], or found a prevalence of 26% in secondary schools in Hong Kong [6]. In Peru, local studies confirm this trend. A recent study found 46.9% of a sample of university students in Lima at high risk of internet addiction [7]. Finally, Cruzado *et al.* mention 18.3 ± 3.8 years as the main age among hospitalized patients in the National Institute of Mental Health Honorio Delgado-Hideyo Noguchi in Lima with the diagnosis of internet addiction [8].

Regarding social skills, these are described as observable behaviors, learned and used in social exchanges for specific purposes, i.e., observable expressions of social intelligence [9]. In adolescence, the role of social skills is essential in peer approaching, the formation of the couple and participation in various groups. Fioravanti and Casale point to the link between excessive internet use and low development of social skills in adolescents [10]. Therefore, the idea arises of linking these two factors in this study. Bijstra *et al.* note that low self-esteem is critical in developing internet addiction and other addictive behaviors, this may lead some people to temporary "relief activities" [11].

Internet addiction can lead to problems in social relationships, personality and mental health (8.7%) [11]. Gracia *et al.* mention that the most prominent problems are negative effects on social and family relationships, loss of working and studying time (14%) [12]. Jordan *et al.* even mention decreased physical activity and sedentary lifestyle, poor dietary habits and irregular eating patterns [13].

As for proposed treatments, psychotherapy plays an important role [14] including individual psychotherapy, group and family psychotherapy. In the family, the intervention should focus on promoting education of members about how addictive the use of internet can be, promote open communication about the problems that led the individual to this situation and finally encourage the family to collaborate in the recovering addict [15].

The main objective of the study was to determine the frequency of internet addiction and its relationship to the degree of social skills in adolescents from two schools in the area of Condevilla, district of San Martin de Porres, Lima, Peru.

## Methods

Transversal relational study, conducted in the adolescent population of Inca Pachacutec and Alfonso Ugarte state-owned schools, in the area of Condevilla, Lima, Peru. Adolescents aged 10 to 19 years (according to the definition of the World Health Organization- WHO) were selected from randomly selected fifth and sixth primary school classrooms, and first through third high school classrooms. We also collected data about the student population and some sociodemographic characteristics.

To determine the sample size, we found that the rate of presence of low social skills in adolescents with non-pathological internet use in previous studies [2],[3],[4],[5],[6] was 15% to 25% approximately ( $p_1 = 0.20$ ), a prevalence that even reaches 30 or 35% in case of risky or pathological use of the internet ( $p_2 = 0.35$ ). Using these values, an alpha error of 0.05 and beta 0.20, and a 95% confidence interval, a sample size of 151 participants is required. Considering a 25% loss or rejection rate, the final figure would be 202. A sample size of 212 participants was finally decided.

We proceeded to apply the assent and informed consent. We selected 212 students out of which 179 (n) agreed to participate in the study; 43 adolescents refused to participate. A hundred surveys were conducted on the first day and 79 the second day.

Inclusion criteria were adolescents who agreed to participate in the study by signing the informed consent or assent. We excluded students who refused to sign the informed consent or refused to participate in the study.

Two tests were applied: the first one, the Social Skills Test [9], consists of 42 multiple-choice questions divided into four components (assertiveness, communication skills, self-esteem, and decision-making skills). This method provides a result for each component and a total result. While the second test, Lima Internet Addiction Scale (Cronbach's alpha of 0.84), which was validated in adolescents from the Metropolitan Lima area [16], consists of 12 questions. After delivering it to adolescents, we explained what the two questionnaires consist of and how to complete them; both questionnaires were self-administered.

The dimensions included in the Social Skills Test were classified as low skill (1-2 points), average (3-5 points) and high (6-7 points) according to the Social Skills Test of the Ministry of Health of Peru [9]. It should be mentioned that, although it has not been validated, this instrument was chosen because specialists of the Specialized Institute of Mental Health "Honorio Delgado - Hideyo Noguchi", have elaborated it. Its use is widely extended and it is part of the protocols of Attention to Adolescents in the Primary Health Centers of the Ministry of Health.

Internet addiction was defined when the score on the Scale of Lima Internet addiction [16] was greater than or equal to 27 points.

Other variables used in the study were: age (categorized in two groups, students aged 10 to 12 years old and students aged 13 to 19 years old), sex (female and male) and grade of study (primary: 5th-6th grade, and secondary: 1st, 2nd and 3rd grade). This classification was done in order to determine any difference between primary and secondary students (10 to 12 years old, 5th - 6th grade vs 13 to 19 years old, 1st to 3rd grade), as well as differences between men and women.

For data analysis, a description of the sample was performed by comparing those who had and did not have internet addiction. To compare both populations Chi2 test and Fisher's exact test were used.

Afterwards, we adjusted a generalized linear model using the binomial family and the link log to determine the prevalence ratios and confidence intervals to 95% for the variables of interest. Finally, we used a forward stepwise technique to determine the factors associated with internet addiction. The multivariate method was used, since it was tried to determine the independent influence of two variables (sex and degree of social skills) on the degree of internet addiction.

We used STATA 12 (Stata Corporation, College Station, Texas, US) for all analyses. The project was reviewed and approved by the ethics committee of the Universidad Peruana Cayetano Heredia.

## Results

Out of 179 students interviewed, 49.2% were male. The median age was 13 years (range: 10-16 years). And 78.8% were in high school (Table 1).

We compared age, sex and level of studies, as well as each of the components of the Social Skills Test and its total result, between those with and those without internet addiction.

	Total	Internet addiction (n=179)		p
	n=179	No (n=156)	Yes (n=23)	
	Frequency (%)	Frequency (%)	Frequency (%)	
<b>Age: 13 -16 years old</b>	115 (64.3)	100 (64.1)	15 (65.2)	<b>0.917</b>
<b>Sex: Male</b>	88 (49.2)	70 (44.9)	18 (78.3)	<b>0.003</b>
<b>Grade: High school</b>	141 (78.8)	122 (78.2)	19 (82.6)	<b>0.788</b>
<b>Assertiveness</b>				
High	75 (41.9)	68 (43.6)	7 (30.4)	<b>0.358</b>
Average	103 (57.5)	87 (55.8)	16 (69.6)	
Low	1 (0.6)	1 (0.6)	0	
<b>Communication skills</b>				
High	41 (22.9)	36 (23.1)	5 (21.7)	<b>0.045</b>
Average	123 (68.7)	110 (70.5)	13 (56.5)	
Low	15 (8.4)	10 (6.4)	5 (21.7)	
<b>Self-esteem</b>				
High	37 (20.7)	35 (22.4)	2 (8.7)	<b>0.279</b>
Average	135 (75.4)	115 (73.7)	20 (87.0)	
Low	7 (3.9)	6 (3.9)	1 (4.3)	
<b>Ability to make decisions</b>				
High	49 (27.4)	46 (29.5)	3 (13.0)	<b>0.063</b>
Average	125 (69.8)	107 (68.6)	18 (78.3)	
Low	5 (2.8)	3 (1.9)	2 (8.7)	
<b>Social skills (total)</b>				
High	55 (30.7)	53 (34.0)	2 (8.7)	<b>0.004</b>
Average	118 (65.9)	100 (64.1)	18 (78.3)	
Low	6 (3.4)	3 (1.9)	3 (13.0)	

**Table 1.** Description of the sample and presence of Internet addiction (n = 179).

We used the bivariate and multivariate analysis to determine the influence of the different variables on the result (internet addiction). In the multivariate analysis, we evaluated the independent association of the variables age,

sex and level of studies, as well as the total Social Skills Test result with internet addiction (Table 2). Factors independently associated with internet addiction were sex ( $p = 0.016$ ), and low social skills ( $p = 0.004$ ).

	Bivariate		Multivariate*	
	PR (95% CI)	p	PR (95% CI)	p
Age: 13 -16 years old	1.04 (0.47-2.33)	0.917		
Male sex	3.72 (1.44-9.59)	0.006	3.21 (1.25-8.26)	0.016
Grade: high school	1.28 (0.46-3.54)	0.634		
<b>Social skills (total)</b>				
High	Reference		Reference	
Average	4.19 (1.01)	0.049	3.84 (0.93)	0.063
Low	13.75 (2.85)	0.001	9.67 (2.03)	0.004

\* Adjusted  
PR: Prevalence rate  
CI: Confidence interval

**Table 2.** Internet addiction associated factors.

## Discussion

The results of the study show a relationship between social skills and degree of internet use in adolescents. The frequency of internet addiction was 12.9%, which is consistent with other studies in other latitudes [10],[11],[12],[13],[17]. Due to increased access to the Internet in general, and the use of social networks and other internet tools in many aspects of daily life, as a means of communication, access to information and means of entertainment, you can explain the percentage found. The process of changes and transformations experienced by the adolescent, both physically and psychologically, within which we find a high prevalence of self-esteem issues, communication, depression and emotional instability, that in many cases lead to a "virtual search" in detriment of other more personal [5].

Previous studies [8],[17],[18] also show variations in internet usage with predominance of male gender, in which our study also agrees. The explanation could be that male teenagers make greater use of the Internet by consuming online games, pornography and social networks [18].

It has been shown in previous studies that teens with problems of internet use were more likely to have behavioral and social relation problems, as well as lower rates of satisfaction [11],[12]. Other studies have found a relationship between the degree of internet use and presence of behavioral disorders such as attention deficit hyperactivity disorder, depression, anxiety or substance abuse [7].

Among the strengths of this study, we have the fact of being one of the few studies in our country and the use of scales like the Social Skills Test, often used and known by health personnel at the first level of care. In addition, in the case of internet addiction, we used a scale previously validated in the local population.

Within the limitations, although the questionnaire of Social Skills of the Ministry of Health is widely used by health professionals, it has not been validated through research. It would be important to validate this widely used instrument. Another limitation found is that being a cross-sectional study, it cannot determine causality or the direction of the particular relationship between internet addiction and low social skills. Further studies are required.

Finally, the study was conducted in state owned schools in certain area of Lima, limiting their external validity and generalizability to other realities and other socioeconomic levels, so it would be interesting to conduct similar studies in other fields and realities.

## Conclusion

This study demonstrates the relationship between Internet addiction and low social skills as well as a relationship between Internet addiction and male sex. Measures and health policies to prevent such behavior in teenagers are required, within the individual bio psycho-social approach,

as well as designing strategies to address these problems from the field of primary care, by promoting healthy lifestyle and habits, such as prevention of risk behaviors in this age group.

## Notes

### From the editor

The authors originally submitted this article in Spanish and subsequently translated it into English. The Journal has not copyedited this version.

### Clarification from the editor

This work is part of a specialty thesis in Family Medicine from Peruvian University Cayetano Heredia (Lima-Peru), available in:

[https://www.academia.edu/11761312/UNIVERSIDAD\\_PERUANA\\_CAYETANO\\_HEREDIA](https://www.academia.edu/11761312/UNIVERSIDAD_PERUANA_CAYETANO_HEREDIA)

### Ethical aspects

The Journal has evidence that the Institutional Ethics Committee of the Peruvian University Cayetano Heredia; was informed about this study and its possible publication in a biomedical scientific journal.

### Conflicts of interest

The authors completed the ICMJE conflict of interest declaration form, translated to Spanish by Medwave, and declare not having received funding for the preparation of this report, not having any financial relationships with organizations that could have interests in the published article in the last three years, and not having other relations or activities that might influence the article's content. Forms can be requested to the responsible author or the editorial direction of the Journal.

### Financing

Authors declare there were no external funds for this study.

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