ORIGINAL ARTICLE

Associated Factors with the Academic Use of Social Networks in Medical Students from 40 Cities in Latin America

MARIO J. VALLADARES-GARRIDO[1], TELMO RAUL AVEIRO-RÓBALO[2], DANIELA JIMÉNEZ-PEÑA[3], FIORELLA IBAÑEZ UGOZZOLI[4], JAIME PINEDA MORENO[5], JUAN ALCIDES ALVAREZ CABRERA[6], LEYLA HUANCA-MAMANI[7], DANAI VALLADARES-GARRIDO[8], CHRISTIAN R. MEJIA[1]

[1]Universidad Continental, Lima, Perú.
[2] Universidad del Pacífico, Asunción, Paraguay.
[3]Universidad Pedagógica y Tecnológica de Colombia (UPTC), Tunja, Colombia.
[4]Universidad Católica de Córdoba, Argentina.
[5]Universidad Cooperativa de Colombia, Facultad de Medicina, Medellín, Antioquia, Colombia.
[6]Facultad de Medicina de la Universidad Nacional de Itapúa, Paraguay
[7]Sociedad Científica de Estudiantes de Medicina Tarija UAJMS, Bolivia
[8]Universidad Nacional de Piura, Piura, Perú
Correspondence to Mario Josué Valladares Garrido, E-mail: mvalladares@continental.edu.pe / josvg44@gmail.com, Mobile: + 51 944655-396

ABSTRACT

Aim: To identify the factors associated with the academic use of social networks in medical students from 40 faculties in Latin America.
Methods: Analytical, cross-sectional analysis of secondary data in medical students from 40 Latin American cities. A self-administered questionnaire was used to evaluate the academic use of social networks and their association with socio-educational characteristics and training in scientific databases. Mixed effects multilevel generalized linear models (MEGLM) were used to estimate prevalence ratios (PR).
Results: Of 11587 participants, 57.7% used social networks academically. The level of advanced English increased 1.33 times the prevalence of academic use of social networks (PR: 1.33, 95% CI: 1.24-1.43, p <0.001) while belonging to more than one academic-scientific extracurricular group decreased 34% said prevalence (PR: 0.66, 95% CI: 0.54-0.81, p <0.001). The training for SciELO and Google Scholar increased 18% (PR: 1.18, CI95%: 1.11-1.25, p <0.001) and 11% (PR: 1.11, CI95%: 1.05-1.18, p <0.001) the prevalence of use of social networks in an academic way, respectively.
Conclusion: We can affirm that, more than half of the respondents use social networks in their medical training. Proceeding from seven out of eleven surveyed countries, reporting basic-advanced English level, being trained in SciELO and Google Scholar were positively associated with using social networks academically. On the contrary, coming from a private university, belonging to extracurricular groups and not being able to use Google Scholar was associated negatively.
Keywords: social networks, medical student, research.

INTRODUCTION

Currently, the Internet has generated new applications, called social networks, such as Facebook, Twitter and WhatsApp. Through these tools, its users can communicate, share information, develop leisure activities and socialize with other people; through the dissemination of images, videos and data with their contacts[1-5]. In addition, these tools are used for educational and work purposes in different professional fields[6-10].
Scientific research is not alien to the massive use of social networks, because it allows the dissemination of useful information for health organizations, researchers, universities, research centers, institutions and scientific journals; through which there are articles on science and relevant information about opportunities for internships, scholarships and other scientific topics[11-14]. We have also generated new teaching strategies in medical education, health promotion and awareness strategies for the general population through these tools[15-17]. In Peru, studies that affirm that Twitter is a potential tool to develop and promote research, exploring the experiences detected in its use in a particular university[7]. Similarly, in different countries of Latin America, it is reaffirmed not only in the use of Twitter, but also in Facebook for the implementation of medical education strategies[18-21]. Likewise, Facebook has proven to be very useful in undergraduate research, since it allows researchers to conduct multicenter studies in Latin America[22-24].

However, the evidence on the academic use of social networks and the factors that influence their use is scarce, especially in medical students from Latin America and the Caribbean. Therefore, the objective of this research was to determine the academic use of social networks in medical students from 40 cities in Latin America, as well as their associated factors.

METHODS

Study design: Multicenter, observational, analytical, cross-sectional analysis of secondary data in medical students from 40 Latin American cities, conducted during the months from January to July 2016.
Sample and population: The population was medical students from 40 cities in Latin America. The study sample was made up of 11,587 medical students from 11 countries from 40 universities in Latin America. In the primary study, those students who gave verbal consent to participate in

Formatted: Font: Bold
Formatted: Font: Bold, Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font: 11 pt, Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font: 10 pt, Spanish (Peru)
Formatted: Left
Formatted: Font: 9 pt
Formatted: Font: 9 pt

the research and who were enrolled on a regular basis in the academic year 2016-I were included. We excluded those who were enrolled in the corresponding academic year at boarding school doctor and who did not respond to the questionnaire variables of interest. In the present study, the records of all the participants selected for the primary study were included.

The sample size was 318 medical students, this was calculated with a power of 80%, statistical significance at 95% and for an infinite population, whereby a minimum sample size of 289 was obtained students for each site participants, so it was added 10% loss. The inclusion of each participating site was determined for convenience, particularly those universities where a Scientific Society of Medical Students (SSMS) affiliated with the Latin American Federation of Scientific Societies of Medical Students (FELSOCEM) operated between 2015-2016.

Procedures: The participation of 40 medical schools from 11 countries in Latin America was achieved. The instrument used was a questionnaire previously validated in form and substance with a pilot study, conducted in 15 faculties of medicine of Latin America prior to official execution. A collaborative team of at least 3 students was formed and approval was requested from each medical school participating in the research to perform the same.A particular academic class was chosen to survey each year of studies, with the only requirement that it not be carried out during the evaluation schedule. We asked about their intention to participate in the study, according to each student it was chosen using odd jumps to complete the calculated sample size in that year of study. The average execution time of the questionnaire was 15 minutes in each participating venue.

The study instrument investigated issues related to knowledge, use, training and access to information and communication technologies (ICT) and scientific databases. Also, questions about the use of four social networks (Facebook, Whastsapp, Twitter and Tinder) were included.

The outcome variable was constructed using the answers to the question do you use it for any academic activity? in only three of the four social networks evaluated (Facebook, Whastsapp and Twitter), since Tinder's answers were excluded by the researcher's decision as they did not have academic relevance. Thus, the variable academic use of social networks was generated, defined as the medical student's self-report of using two or more social networks academically.

The co-variables of interest were socio-educational characteristics, such as age in years, gender, country of origin, type of university, attend clinical cycles, have a previous career, level of English language, membership in extracurricular scientific-academic groups. Likewise, the training in databases of PUBMED, UPTODATE, SciELO and the Google Scholar search engine was investigated.

Statistical Analysis and Power Calculation: Statistical analysis was performed with Stata program v.15.0 (StataCorp LP, College Station, TX, USA). Categorical variables described in frequencies and percentages. In the case of numerical variables, measures of central tendency and dispersion were reported, after evaluation of the assumption of normal distribution in graphic and analytical form.

For bivariate analysis of categorical variables, the Chi square test of independence was used in case it fulfilled the assumption of expected frequencies, otherwise Fischer's exact test was useful. In numerical variables, the assumption of variance homogeneity and normal distribution was evaluated, based on the Student's T test, otherwise the Mann Whitney U test. We worked with a level of significance of 5%.

For analysis of simple and multiple regression, it was used crude and adjusted prevalences ratioRPCs (reasons of crude prevalences) RPA (adjusted prevalences reasons), 95% CI (confidence interval 95%). Generalized Multilevel Linear Models of Mixed Effects (MEGLM)Generalized linear models (GLM, for its acronym in English) it was used, using family Poisson link function log, robust models and the participating university as a cluster group. In the simple regression, association between each co-variable of interest and the academic use of social networks was evaluated. In the multiple regression, the contribution of each co-variable in the final parsimony model was evaluated, using the log likelihood ratio test (LRTest), according to which the factors associated with the academic use of social networks were determined. Finally, extra models were constructed, where all the co-variables that did not enter the final model were adjusted in the final model.

Ethics: The study was approved by the Ethics Committee of the National Hospital San Bartholomew, Lima. The surveys were auto-administered and anonymous, and the privacy of the participants was respected through the use of digital codes.

RESULTS

Of 11,587 participants selected for this analysis, 57.7% self-reported using social networking academically (n = 5176). More than half of the respondents were female (53.7%), came from the national university (52.8%) and attended clinical years (52.9%). 27.3% reported having received training for the use of PUBMED and 12.5% were affiliated with a SSMS. Table 01

The variables associated with a higher frequency of academic use of social networks were previous careers, level of English, training for use of PUBMED, UPTODATE, SciELO and Google Scholar. The rest of results are in Table 2.

In the simple regression analysis, a positive association was found between the academic use of social networks and proceeding from Colombia (PR:2.58, CI95%:2.20-3.02), have a previous career (PR:1.13, CI95%:1.05-1.20), have advanced English level (PR:1.52, CI95%:1.42-1.63), belong to the research group (PR:1.09, CI95%:1.01-1.19), have received training for PubMed use (PR:1.30, CI95%:1.24-1.36), UpToDate (PR:1.58, CI95%:1.51-1.65), SciELO (PR:1.24, CI95%:1.18-1.30) and Google Scholar (PR:1.13, CI95%:1.08-1.19) (Table 3).

In the final nested model, variables were included in the following order: country of residence, Google Scholar training, English proficiency, SciELO training and university tipetype. The level of advanced English increased 1.33

Formatted: Right
Formatted: Justified
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Justified
Formatted: Right
Formatted: Font: 9 pt
Formatted: Font: 9 pt

times the prevalence of academic use of social networks (PR:1.33, CI95%:1.24-1.43) while belonging to more than one academic-scientific extracurricular group decreased 34% said prevalence (PR:0.66, CI95%:0.54-0.81). Training for SciELO and Google Scholar increased 18% (PR:1.18, CI95%:1.11-1.25) y 11% (PR:1.11, CI95%:1.05-1.18) the prevalence of using social networks in an academic way, respectively (Table 3).

Table 1: Characteristics of medical students from 40 faculties of medicine in Latin America.

Characteristics		N (%)
Sex		
	Male	5363 (46.3)
	Female	6224 (53.7)
Age (years)*†		21 (15-44)
Country of residence		
	Ecuador	638 (5.5)
	Panama	634 (5.5)
	Paraguay	1073 (9.3)
	Bolivia	960 (8.3)
	Peru	4962 (42.8)
	Mexico	636 (5.5)
	Venezuela	643 (5.6)
	Honduras	318 (2.7)
	Colombia	849 (7.3)
	Chile	238 (2.1)
	Argentina	636 (5.5)
Type of university		
	Public	6119 (52.8)
	Private	5468 (47.2)
Clinic course†		
	No	4946 (47.1)
	Yes	5551 (52.9)
Previous carer†		
	No	10689 (92.4)
	Yes	885 (7.7)
English proficiency†		
	Null	2028 (17.6)
	Basic	4666 (40.6)
	Medium	3187 (27.7)
	Advance	1618 (14.1)
Belongs to extracurricular groups		
	None	4852 (41.9)
	SSMS	1449 (12.5)
	Investigation group	440 (3.8)
	Academic group	4741 (40.9)
	More than one	105 (0.9)
PubMed training†		
	Don´t know	4529 (40.1)
	Not trained	3686 (32.6)
	Trained	3082 (27.3)
UPTODATE training†		
	Don´t know	9474 (85.0)
	Not trained	992 (8.9)
	Trained	682 (6.1)
SciELO training†		
	Don´t know	4918 (43.9)
	Not trained	4165 (37.2)
	Trained	2117 (18.9)
Google Scholar training†		
	Don´tknow	3488 (30.9)
	Not trained	5319 (47.1)
	Trained	2495 (22.1)
Academic use of social networks†		
	No	3798 (42.3)
	Yes	5176 (57.7)

* Media ± standard deviation
† Some values do not add up to 11,587 due to missing data
SSMS: Scientifical Society of Medical Students

Table 2: Factors associated with the academic use of social networks in bivariate analysis.

Variables		Academically use of social networks		*p***
		No (n=3798) n(%)	Yes (n=5176) n(%)	
Sex				0.424
	Male	1825 (42.8)	2443 (57.2)	
	Female	1973 (41.9)	2733 (58.1)	
Age (years)*†		21.0 ± 2.9	20.9 ± 3.0	0.293
Country of residence				<0.001
	Ecuador	207 (66.4)	105 (33.7)	
	Paraguay	583 (54.6)	485 (45.4)	
	Bolivia	272 (46.0)	320 (54.1)	
	Peru	2165 (45.3)	2619 (54.7)	
	Mexico	145 (53.1)	128 (46.9)	
	Honduras	69 (22.2)	242 (77.8)	
	Colombia	109 (12.9)	736 (87.1)	
	Chile	59 (25.5)	172 (74.5)	
	Argentina	189 (33.9)	369 (66.1)	
Type of university				<0.001
	Public	1600 (39.4)	2457 (60.6)	
	Private	2198 (44.7)	2719 (55.3)	
Clinic course†				0.073
	No	1652 (43.8)	2122 (56.2)	
	Yes	1735 (41.8)	2418 (58.2)	
Previous career†				<0.001
	No	3562 (42.9)	4749 (57.1)	
	Yes	233 (35.7)	419 (64.3)	
English proficiency†				<0.001
	Null	794 (51.1)	761 (48.9)	
	Basic	1717 (45.0)	2101 (55.0)	
	Medium	933 (38.4)	1495 (61.6)	
	Advance	339 (30.5)	774 (69.5)	
Belongs to extracurricular groups				<0.001

Formatted ...

	None	1529 (40.5)	2246 (59.5)	
	SSMS	442 (35.8)	793 (64.2)	
	Investigation group	114 (33.2)	229 (66.8)	
	Academic group	1675 (47.3)	1863 (52.7)	
	More tan one	38 (45.8)	45 (54.2)	
PubMed training†				<0.001
	Don´t know	1615 (48.1)	1745 (51.9)	
	Not trained	1282 (44.6)	1591 (55.4)	
	Trained	830 (32.7)	1707 (67.3)	
UPTODATE training†				<0.001
	Don´tknow	3275 (44.4)	4107 (55.6)	
	Not trained	334 (43.5)	434 (56.5)	
	Trained	83 (16.0)	436 (84.0)	
SciELO training†				<0.001
	Don´t know	1788 (47.8)	1951 (52.2)	
	Not trained	1296 (41.2)	1850 (58.8)	
	Trained	615 (33.7)	1211 (66.3)	
Google Scholar training†				<0.001
	Don´t know	1231 (43.7)	1587 (56.3)	
	Not trained	1767 (44.3)	2223 (55.7)	
	Trained	710 (35.7)	1279 (64.3)	

* Media ± standard deviation
† Some values do not add up to 11,587 due to missing data
SSMS: Scientifical Society of Medical Students
**pP values calculated using Chi Square test of independence
†† p P-values calculated using T Student test

Table 3: Factors independently associated with the academic use of social networks in multiple regression analysis.

Variables	Simple regression			Multiple regression, parsimonic model A*			Multiple regression B-Z models adjusted by the parsimonic*			Models**
	PR	CI 95%	p	PR	CI 95%	pP	PR	CI 95%	pp	
Sex										B
Male	Ref.						Ref.			
Female	0.98	0.95 - 1.02	0.441				0.91	0.88 - 0.95	<0.001	
Age (years)	0.99	0.98 - 0.99	<0.001				0.99	0.99 - 1.00	0.116	C
Country of residence										
Ecuador	Ref.			Ref.						
Panama	1.00			1.00						
Paraguay	0.76	0.62 - 0.94	0.012	1.01	0.81 - 1.26	0.939				
Bolivia	1.60	1.34 - 1.91	<0.001	1.86	1.55 - 2.24	<0.001				
Peru	1.63	1.39 - 1.91	<0.001	1.88	1.59 - 2.2	<0.001				
Mexico	1.38	1.12 - 1.69	0.002	1.36	1.09 - 1.69	0.006				
Venezuela	1.00			1.00						
Honduras	2.43	2.03 - 2.92	<0.001	2.98	2.45 - 3.62	<0.001				
Colombia	2.58	2.20 - 3.02	<0.001	3.03	2.55 - 3.60	<0.001				
Chile	2.17	1.82 - 2.59	<0.001	2.15	1.78 - 2.61	<0.001				
Argentina	1.95	1.64 - 2.31	<0.001	2.38	1.98 - 2.87	<0.001				
Type of university										
Public	Ref.			Ref.						
Private	0.93	0.89 - 0.96	<0.001	0.92	0.88 - 0.96	<0.001				
Clinic course										D
No	Ref.						Ref.			
Yes	1.02	0.98 - 1.06	0.282				1.01	0.97 - 1.06	0.506	
Previous career										E
Yes	1.13	1.05 - 1.20	<0.001				1.02	0.95 - 1.09	0.619	
English proficiency										
Basic	1.17	1.10 - 1.25	<0.001	1.18	1.11 - 1.26	<0.001				
Medium	1.30	1.21 - 1.39	<0.001	1.15	1.08 - 1.23	<0.001				
Advance	1.52	1.42 - 1.63	<0.001	1.33	1.24 - 1.43	<0.001				
Belongs to extracurricular groups										
SSMS	0.95	0.90 - 1.01	0.126	0.90	0.84 - 0.96	0.001				
Investigation group	1.09	1.01 - 1.19	0.034	0.90	0.84 - 0.97	0.006				
Academicgroup	0.82	0.79 - 0.86	<0.001	0.84	0.80 - 0.88	<0.001				
More than one	0.80	0.63 - 1.03	0.080	0.66	0.54 - 0.81	<0.001				
PubMed training										F
Don´t know	Ref.						Ref.			
Not trained	1.01	0.96 - 1.07	0.668				0.97	0.92 - 1.03	0.312	
Trained	1.30	1.24 - 1.36	<0.001				1.03	0.98 - 1.09	0.284	
UPTODATE training										G

Formatted ...

	Don´t know	Ref.						Ref.			
	Not trained	1.06	0.98 - 1.13	0.139				0.96	0.89 - 1.03	0.278	
	Trained	1.58	1.51 - 1.65	<0.001				1.07	1.01 - 1.14	0.023	
SciELO training											
	Don´t know	Ref.			Ref.						
	Not trained	1.10	1.05 - 1.15	<0.001	0.97	0.92 - 1.01	0.140				
	Trained	1.24	1.18 - 1.30	<0.001	1.18	1.11 - 1.25	<0.001				
Google Scholar training											
	Don´t know	Ref.			Ref.						
	Not trained	0.95	0.91 - 0.99	0.029	0.94	0.90 - 0.98	0.006				
	Trained	1.13	1.08 - 1.19	<0.001	1.11	1.05 - 1.18	<0.001				

* p: values obtained with generalized multilevel linear models of mixed effects (MEGLM, ~~siglaseninglés~~), Poisson family, log link fucntion, robust variance and cluster per university
** B-G models adjusted by variables of the parsimonic A model

DISCUSSION

Academic use of social networks: The academic use of social networks in the medical students evaluated was 57.7%. Previous studies in Asian students have found frequency of use lower than that found in our research. This finding is greater than that described by Ali et al. in his study where he found a frequency of use of 37%[25], and another study in the United Kingdom whose frequency was 48.2%[26]. Our favorable results of using social networks in the educational process of medical training suggest that they can be useful tools, which could be due to the unlimited content of information that can be accessed.

Socio-educational factors associated with the academic use of social networks: In the medical students of 40 faculties of Latin America, the frequency of use of social networks in an academic way increased 18% with the training for use of SciELO. This differs with a Peruvian research where if the student owned a Smartphone (access to social networks more frequently through smartphones), it was not associated with frequent use of the SciELO database[27]. This is probably due to the fact that the increase in academic use is related to the training they have for such use.

In this research, students who reported training for Google Scholar use increased the frequency of academic use of social networks by 11%. This is similar to the results of Mejia et al. who reported that Google Scholar is the database most frequently used by students with a previous career[28]. This is similar to other studies and could be attributed to the fact that the Google Scholar platform is quite friendly and practical when it comes to making a bibliographic search.

It was found that the higher the level of English reached by the student, the higher was the frequency of academic use of social networks, as we found that those who reported advanced level of English increased their academic use up to 33%. This found association suggests that those students take better advantage of these tools, this because most of the global scientific literature is in this language, so it is almost an academic obligation to handle the language fluently[29,30]. In addition, language management expands access to more and better sources of access[31-33].

Belonging to groups of scientific studies was also negatively associated with the academic use of networks, contrary to what many studies mention that medical students belonging to groups such as scientific and related societies, have a better academic performance, develop skills such as teamwork and time management, greater scientific production, among other qualities[34-37]. This finding could be due to the fact that these scientific groups receive little or no training on the academic use of social networks.

The type of university also meant a feature that contributed to our outcome of interest in our final model, as it turned out that students from private universities decreased the frequency of academic use of social networks by 8%. This association would mean that students from public universities are likely to show greater interest and take greater advantage of social networks in an academic manner.

Regarding the country of origin, seven of the eleven countries evaluated were positively associated with the frequency of academic use of social networks, increasing this frequency up to 203% in students from Colombia. This relationship found in almost all the countries evaluated suggests that Latin American students are aware that the academic use of social networks is beneficial.

Limitations and strengths: Our research has some limitations, first that the results obtained do not reflect the reality of all the students of each country in Latin America, this is because there were no representatives in each Latin American country but if a large sample was enrolled with the support of the representatives of scientific societies in each participating headquarters. Second, it was not possible to evaluate the use of other types of academic social networks, such as Research gate, Orcid or LinkIn, which could increase or decrease the frequency of our outcome of interest. Third, due to the cross-sectional design of the research, academic use has been evaluated on only one occasion, which could have potential variations as it progresses in the year of studies. Fourth, potential information bias, because the academic use was obtained by student self-report, as well as the training characteristics in use of scientific databases. Finally, the access to "fan pages" or official accounts of scientific journals, universities or academic entities that have a presence in the social networks that were studied was not evaluated, as it was not the objective of the study and which would be interesting to consider for future research.

Despite this, our findings provide solid evidence in terms of recognizing the use of social networks in undergraduate studies and their potential socio-educational factors that influence their use. In addition to our understanding, this is the most extensive research aimed at knowing the influential factors for academic use of social networks, based on the evaluation of students from 11 Latin American countries.

Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font color: Text 1
Formatted: Font: Italic, Font color: Text 1
Formatted: Font color: Text 1
Formatted: Left, Border: Bottom: (Single solid line, Auto, 1.5 pt Line width)
Formatted: Font: 9 pt, English (United States), Check spelling and grammar
Formatted: Font: 9 pt
Formatted: Left

Recommendations: We recommend generating teaching strategies from studies like this one, where the daily use of social networks can be better exploited, for example by working in virtual classrooms of closed Facebook groups, or by using live broadcasts to present videoconferences of international teachers or those who are far away from the university where the student studies.

CONCLUSION

we can affirm that, more than half of the respondents use social networks in their medical training. Proceeding from seven out of eleven surveyed countries, reporting basic-advanced English level, being trained in SciELO and Google Scholar were positively associated with using social networks academically. On the contrary, coming from a private university, belonging to extracurricular groups and not being able to use Google Scholar was associated negatively.

~~Aknowledgement~~**Acknowledgement:** The authors would like to thank the Research Group of the Multicentric Project Latin America conformed 2015-2016 for their contributions in the collection of data in each of the 40 participating sites.
Competing interests: The authors have declared that no competing interests exist.
Funding: The Peru Infectious Diseases Epidemiology Research Training Consortium (D43 TW007393), awarded by the Fogarty International Center of the US National Institutes of Health, sponsored Dr. Valladares's work. The funders had no role in study design, data analysis, decision to publish, or preparation of the manuscript.

REFERENCES

1. Rissoan R. Redes sociales: comprender y dominar estas nuevas herramientas de comunicación. Ediciones ENI; 2016.
2. Melella CE. El uso de las tecnologías de la información y comunicación (TIC) por los migrantes sudamericanos en la Argentina y la conformación de redes sociales transnacionales. 2016;
3. Matarín Jiménez TM. Redes sociales en prevención y promoción de la salud. Una revisión de la actualidad. Rev Esp Comun En Salud. 2015;6(1).
4. Cadavid GMÁ, Ramírez MEG, Plazas C del PN. Uso de TIC en investigación cualitativa: discusión y tendencias en la literatura. Katharsis Rev Cienc Soc. 2017;(23):218–235.
5. Calderón CA, López M, Peña J. El efecto condicional indirecto de la expectativa de rendimiento en el uso de Facebook, Google+, Instagram y Twitter por jóvenes. Rev Lat Comun Soc. 2017;(72):590–607.
6. Curioso WH. Redes sociales en Internet: Implicancias para estudiantes y profesionales en salud. Rev Médica Hered. 2011;22(3):95–97.
7. Curioso WH, Carnero AM. Promoviendo la investigación en salud con Twitter. Rev Medica Hered. 2011;22(3):121–130.
8. Kannan R, Ramakrishnan K, Ojo AO. Social Networking Sites as Communication Tool for Dengue Related Healthcare and Wellness Information. En: Proceedings of the 2nd International Conference on Software Engineering and Information Management. ACM; 2019. p. 204–207.
9. Molina Y, McKell MS, Mendoza N, Barbour L, Berrios NM, Murray K, et al. Health Volunteerism and Improved Cancer Health for Latina and African American Women and Their Social Networks: Potential Mechanisms. J Cancer Educ. 2018;33(1):59–66.
10. Naslund JA, Aschbrenner KA, Marsch LA, Bartels SJ. The future of mental health care: peer-to-peer support and social media. Epidemiol Psychiatr Sci. 2016;25(2):113–22.
11. Curioso WH. La telesalud y las nuevas fronteras de la informática biomédica en el Perú. Rev Peru Med Exp Salud Pública. 2015;32:217–220.
12. Vásquez-Silva L, Ticse R, Alfaro-Carballido L, Guerra-Castañon F. Acceso, uso y preferencias de las tecnologías de información y comunicación por médicos de un hospital general del Perú. Rev Peru Med Exp Salud Pública. 2015;32:289–293.
13. Bukachi F, Pakenham-Walsh N. Information Technology for Health in Developing Countries. Chest. noviembre de 2007;132(5):1624–30.
14. Culquichicón-Sánchez C, Ramos-Cedano E, Chumbes-Aguirre D, Araujo-Chumacero M, Díaz Vélez C, Rodríguez-Morales AJ. Information and Communication Technologies (ICTs): alternative or complement for surveillance, prevention and control of dengue in the Americas? Rev Chil Infectol. 2015;32(3):363–4.
15. Perkins JM, Subramanian SV, Christakis NA. Social networks and health: A systematic review of sociocentric network studies in low- and middle-income countries. Soc Sci Med. 2015;125:60–78.
16. Smailhodzic E, Hooijsma W, Boonstra A, Langley DJ. Social media use in healthcare: A systematic review of effects on patients and on their relationship with healthcare professionals. BMC Health Serv Res [Internet]. 2016;16(1). Link: http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-016-1691-0
17. Chan WS, Leung AY. Use of Social Network Sites for Communication Among Health Professionals: Systematic Review. J Med Internet Res. el 28 de marzo de 2018;20(3):e117.
18. Heredia Caballero ÁG. Facebook en educación médica: punto de vista de usuarios en una residencia de Ginecoobstetricia. Investig En Educ Médica. enero de 2016;5(17):32–9.
19. Akkın Gürbüz HG, Demir T, Gökalp Özcan B, Kadak MT, Poyraz BÇ. Use of social network sites among depressed adolescents. Behav Inf Technol. el 4 de mayo de 2017;36(5):517–23.
20. Oh HJ, LaRose R. Impression management concerns and support-seeking behavior on social network sites. Comput Hum Behav. abril de 2016;57:38–47.
21. Patel D, Jermacane D. Social media in travel medicine: A review. Travel Med Infect Dis. marzo de 2015;13(2):135–42.
22. Pereyra-Elías R, Montenegro-Idrogo JJ, Mayta-Tristán P. Are medical students able to perform multicenter studies? Medwave. 2015;15(08):e6268–e6268.
23. Pereyra-Elías R, Mayta-Tristán P, Montenegro-Idrogo JJ, Mejia CR, Abudinén A. G, Azucas-Peralta R, et al. Differences on Primary Care Labor Perceptions in Medical Students from 11 Latin American Countries. Ciccozzi M, editor. PLOS ONE. el 14 de julio de 2016;11(7):e0159147.
24. Mayta-Tristán P, Cartagena-Klein R, Pereyra-Elías R, Portillo A, Rodríguez-Morales AJ. Apreciación de estudiantes de Medicina latinoamericanos sobre la capacitación universitaria en investigación científica. Rev Médica Chile. 2013;141(6):716–722.
25. Ali M, Yaacob RAIBR, Al-Amin Bin Endut MN, Langove NU. Strengthening the academic usage of social media: An exploratory study. J King Saud Univ - Comput Inf Sci. octubre de 2017;29(4):553–61.
26. Knight CG, Kaye LK. "To tweet or not to tweet?" A comparison of academics' and students' usage of Twitter in academic contexts. Innov Educ Teach Int. 2016;53(2):145–55.

Formatted: Right
Formatted: Right
Formatted: Font: 9 pt
Formatted: Font: 9 pt

27. MejÃ\-a CR, Valladares-Garrido MJ, Luyo-Rivas A, Valladares-Garrido D, Talledo-Ulfe L, Vilela-Estrada MA, et al. Factores asociados al uso regular de fuentes de informaciÃ³n en estudiantes de medicina de cuatro ciudades del PerÃº. Rev Peru Med Exp Salud Publica. 2015;32:230–6.
28. Mejia CR, Valladares-Garrido MJ, Quintana-Gomez S, Heredia P. Carrera previa como factor asociado al uso de buscadores científicos entre estudiantes de medicina latinoamericanos: cuando la experiencia no cuenta. Educ Médica. marzo de 2019;20:131–5.
29. Koerber A, Graham H. Theorizing the Value of English Proficiency in Cross-Cultural Rhetorics of Health and Medicine: A Qualitative Study. J Bus Tech Commun. enero de 2017;31(1):63–93.
30. Di Bitetti MS, Ferreras JA. Publish (in English) or perish: The effect on citation rate of using languages other than English in scientific publications. Ambio. febrero de 2017;46(1):121–7.
31. López-Navarro I, Moreno AI, Quintanilla MÁ, Rey-Rocha J. Why do I publish research articles in English instead of my own language? Differences in Spanish researchers' motivations across scientific domains. Scientometrics. 2015;103(3):939–76.
32. Ribeiro L, Severo M, Pereira M, Ferreira MA. Scientific Skills as Core Competences in Medical Education: What do medical students think? Int J Sci Educ. 2015;37(12):1875–85.
33. Urbonienė J, Koverienė I. A comparative investigation of english language profi-ciency and academic performance of current undergrad-uate students with special reference to generation z: rural versus urban students. Proccedings of International Scientific Conference "RURAL DEVELOPMENT 2017" [Internet]. Aleksandras Stulginskis University, Lithuania: Aleksandras Stulginskis University; 2018. Link: http://conf.rd.asu.lt/index.php/rd/article/view/521
34. Sánchez-Duque JA, Gómez-González JF, Rodríguez-Morales AJ. Publicación desde el pregrado en Latinoamérica: dificultades y factores asociados en estudiantes de Medicina. Investig En Educ Médica. 2017;6(22):104–8.
35. Universidad del Pacífico Privada, Aveiro-Róbalo T, Escobar-Salinas J, Universidad Nacional de Caaguazú, Rotela-Fisch V, Universidad Nacional Asunción. Medical student's scientific societies importance in Latin America. Investig En Educ Médica. 2019;29(1):23–9.
36. Niño R, Marañón R, Rodríguez A. FELSOCEM: Visión científica de un pasado, un presente y un futuro. CIMEL Cienc E Investig Médica Estud Latinoam. 2003;8(1):61–62.
37. Toro-Huamanchumo CJ, Failoc-Rojas VE, Díaz-Vélez C. Participación en sociedades científicas estudiantiles y en cursos extracurriculares de investigación, asociados a la producción científica de estudiantes de medicina humana: estudio preliminar. FEM Rev Fund Educ Médica. 2015;18:293–8

Short title: Academic use of social networks

Formatted: Left, Border: Bottom: (Single solid line, Auto, 1.5 pt Line width)

Formatted: Font: 9 pt, English (United States), Check spelling and grammar

Formatted: Font: 9 pt

Formatted: Left