

Measurement indicator to psychology online in Latin American in pandemic times

Indicador de Medición en Psicología online en América Latina en tiempos de pandemia

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ABSTRACT

Introduction: In areas of technology, virtualization, and digitization, cyberspaces of supply and demand of services are offered online; One of them in times of pandemic is the possibility of acquiring psychology services online, assuming a priori that these websites are trusted by users and of good quality. This work proposes certain indicators to evaluate the websites that provide the online psychology service in Latin America. **Methodology:** Under an experimental methodological design, 144 online psychology websites were analyzed, evaluating objective variables to submit them to a factor analysis to construct indicators. **Results:** According to the proposed indicators, Brazil ($\bar{X}=2.00$) is identified as the country with the best ratings, followed by Argentina ($\bar{X}=2.5$), Chile ($\bar{X}=2.67$), and Colombia ($\bar{X}=3.5$); Integra Médica (Chile) (IMPOL 0.4629) is the URL for online psychology with the best rating in Latin America. **Discussion:** Despite the pandemic conditions that the world is currently experiencing, and the latent need of people to access psychological therapies online, websites lack several aspects of web quality such as security, accessibility, and web positioning. **Conclusions:** The Online Psychology Measurement Indicator (IMPOL) is a tool that allows evaluating the websites of this category and detecting the strengths and weaknesses of each site that provides online psychology in times of pandemic.

KEYWORDS: psychology; epidemic; factor analysis, Latin America, electronic commerce; security; information accessibility.

RESUMEN

Introducción: En ámbitos de tecnología, virtualización y digitalización se brindan ciberespacios de oferta y demanda de servicios vía online; uno de ellos en tiempos de pandemia, es la posibilidad de adquirir servicios de psicología vía online, asumiendo a priori que estos sitios web son de confianza para los usuarios y de buena calidad. Este trabajo propone ciertos indicadores para evaluar los sitios web que prestan el servicio de psicología online en América latina. **Metodología:** Bajo un diseño metodológico experimental se analizó 144 sitios web de psicología online evaluando variables objetivas para someterlas a un análisis factorial con el propósito de la construcción de indicadores. **Resultados:** Según los indicadores propuestos se identifica a Brasil ($\bar{X}=2.00$) como el país que mejor índices arrojó, seguido de Argentina ($\bar{X}=2.5$), Chile ($\bar{X}=2.67$) y Colombia ($\bar{X}=3.5$); Integra Médica (Chile) (IMPOL=0.4629) es la URL de psicología online que mejor calificación obtuvo en América Latina. **Discusión:** A pesar de las condiciones pandémicas que atraviesa el mundo actualmente, y la latente necesidad de las personas para acceder a terapias psicológicas online, los sitios web carecen de varios aspectos de calidad web como seguridad, accesibilidad y posicionamiento web. **Conclusiones:** El Indicador de Medición de Psicología Online (IMPOL) es una herramienta que permite evaluar a los sitios web de esta categoría y detectar fortalezas y debilidades de cada sitio que brinda psicología online en tiempos de pandemia.

PALABRAS CLAVE: psicología; epidemia; análisis factorial, América latina, comercio electrónico; seguridad; accesibilidad a la información.

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Translation by **Paula González** (Universidad Católica Andrés Bello, Venezuela)

1. Introduction

Within the framework of science that studies all those mental processes, human capacities, perceptions, and behaviors of the being from an analytical discipline such as psychology, which in other words studies mental activity basically from the behavioral, affective, and cognitive perspectives, different sociocultural phenomena are presented that in one way or another allow the traditional ways of exercising science to change, in this case, over the traditional forms of psychological service in which people personally access therapies, and who face less time to have their personal appointments with their preferred psychologist.

The resounding advance of technology that unfailingly invades any area of knowledge, in recent times there are different aspects of science and specifically the study of the mind and its psychic processes; each time with greater validity that is impregnated by devices, tools, and means that facilitate contact and improve the dynamics that psychology has in the middle of its therapeutic procedures. Currently, there are e-Health services (Bouzas-Lorenzo & Mahou, 2013 and Pan American Health Organization, 2016; Sanmartín, Ávila, Vilora & Jabba, 2016) health services mediated by the internet, also known as telehealth or telemedicine due to the use of technologies, videoconferences, e-mail, and Smartphone apps, to support remote health services (Yang & Zhang,

2019; Zhou et al., 2020), these are the preferred mechanisms for coping with social distancing to obtain psychological sessions at a distance.

Psychology is not alien to the adaptation of new therapeutic exercises mediated by the web, where "the use of the mass media to disseminate psychology has led to ambivalent consequences for this discipline" (Arana, Meilán, & Pérez, 2006); It is for this reason that the concern lies in this research, about the analysis of the provision of psychological virtual services, shortening distances, minimizing barriers, even minimizing sales prices, facilitating tasks and activities of users (Echeburúa & de Corral, 2010) allowing access effectively and dynamically to practice psychology to a public eager for this service, taking into account public health phenomena such as the current COVID-19 pandemic crisis, and the new forms of interaction in new online communities (Castells, 2009), and that the use of these technologies in modern society does not cause an opposite effect, turning them into an end and not a means (Espinar, Zych, & Rodríguez-Hidalgo, 2015).

A study carried out by We Are Social not only shows the quantitative use of the internet, but also the great possibility of generating an offer of services to as many audiences willing to pay for it, although quality levels may be affected, because although the growth in the offer of psychological services through the web is not questioned, the use of the fixed telephone at first and then the mobile phone, became ideal tools to provide e-Psychology services (Baena, Quesada & Vogt, 2008); later this exercise ventured through the web, taking into account the internet as a means to share experiences and communicate with others (Ortega Ruíz, Del Rey, & Sánchez, 2012). At present, virtual reality and augmented reality have even been implemented as a simulation of situations for therapeutic exercises (Soto & Gómez, 2018; Baena, Quesada & Vogt, 2008, and Brown, 1998) in the field of e-psychology or telemedicine, thus video calls have mediated therapeutic exercises and reduce social isolation and loneliness during the current crisis, especially in older adults (Noone et al., 2020); Similarly, in times of the COVID-19 pandemic, studies reveal artificial intelligence (AI) as effective tools in intervention programs in psychological crises, likewise online mental health services facilitate emergency interventions and improve their quality in the current epidemic (Liu, et al., 2020).

Psychology professionals cannot be oblivious to technological advances beyond knowing their profession, and if they want to offer their services through cyberspace (Domínguez, 2007), they must bear in mind peripheral aspects of their profession such as, "organization, integrity, remuneration, and flexibility" (Helou et al., 2020); Besides, they must have knowledge in "Technological supports for document management; management of web content on social networks; semantic web for value-added products, and business possibilities with information processing." (Morato, Sánchez & Fernández, 2015); and also, strengthen their competencies called "Technological interest" and "e-Psychology" as the use of ICT to get in touch with their patients (Brown, 1998; Charria, Sarsosa, & Arenas, 2011).

This research aims to make a diagnosis on the offer of psychological services mediated by the Internet in Latin America; what characteristics do these platforms that offer such a service have; what patterns of web structure do they have, and if there is a way to measure and characterize these web platforms. There is a variety of methodologies to analyze the web (Hernández & Fransi, 2014; Codina, et al., 2014; Rodríguez-Martínez, Codina, & Pedraza-Jiménez, 2010, and Freixa, Soler-Adillon, Sora & Ribas, 2014) and that are relevant to this particular study. First of all, these studies refer to the analysis of cyber-media and other studies speak of meta-media, but for this study, the term cyber-media is the most appropriate.

The SAAC system by Codina et al. (2014) illustrates employing two sets (Set of Terms and Set of Phases, Activities, and Results) a system to study digital media, articulating the first set consisting of 12 Terms with the second set consisting of 4 Phases, 11 Activities, and the Results for each Phase; The interesting thing about this methodology is that it is open and free to be applied to any cybermedia with the variables that the researcher considers pertinent. On the other hand, there is the study by Rodríguez-Martínez, Codina, and Pedraza-Jiménez (2010) on Cybermedia and Web 2.0 to determine their quality concerning 3 indicators (General, Specific Internal, and Specific External) in terms of accessibility (Valdés, 2013; Conesa, Aguinaga, Hernández, 2011, and Voces-Merayo, 2007), visibility and popularity, access to information (Cristobal-Fransi & Marimon-Viadiu, 2010; Vázquez-Casielles, Rio-Lanza & Suárez-Álvarez, 2009) of 3 categories and technologies that facilitate social communication.

However, Hernández and Fransi (2014) describe with their 4 dimensions a method of evaluating quality in cybermedia; dimensions such as efficiency (Petnji, Marimon & Casadesús, 2012), system availability, reliability and privacy (Parasuraman, Zeithaml, & Malhotra, 2005, and Vázquez-Casielles, Rio-Lanza & Suárez-Álvarez, 2009), and interaction, characteristics that make a complete evaluation from each of their own variables. This study and those mentioned above together complement the cybermedia analysis methodology in the provision of services in online psychology in a complete, global, and systemic way as intended.

On the other hand, the measurement of websites has been extensively researched without yet generating a practical model or a construct in terms of quality that generally allows websites to be evaluated under the same parameter or instrument (González, Bañegil & Buenadicha, 2013); Studies such as that of Rappa (2005) propose that different types of websites exist, establishing 9 categories: brokerage, advertising, infomediary, merchant, manufacturer, affiliation, community, subscription, and utility. In this sense, the websites that offer psychology services online fall within the merchant type under the criteria of Rappa (2005).

The ISO9126 standard in the same way shares a software quality model in 3 important areas, interior (static properties of the code), exterior (dynamic properties of the code when executing), and in use (satisfaction of the user's needs). The quality of the software is expressed in 10 characteristics (the first 6 of them, common between internal and external and 4 of use); These characteristics are: Functionality; Reliability; Usability; Efficiency; Maintainability; Portability; Effectiveness; Productivity; Security, and Satisfaction. Recent studies show web/software analysis which is referred to in terms of quality, as e-SQ/e-SERVQUAL/e-QUAL; WebQUAL; SiteQUAL; ComQ/eTailQ; WebQUAL 4.0, and Etransqual in which the aspects "Efficiency, Compliance, Availability, Privacy, Responsiveness, Compensation, Contact, Utility, Ease of use, Design, Entertainment, Complementary relationship, Processing speed, Security, Website design, Reliability/compliance, Privacy/security, Customer service, Usability, Information quality, Interaction quality, Functionality/design, Enjoyment, Process, Reliability, and Responsiveness" are measured using a scale (González et al., 2013; Zeithaml, 2000, 2002; Zeithaml et al., 2002; Parasuraman et al., 2005; Loiacono et al., 2007; Yoo & Donthu, 2001; Wolfinger & Gilly, 2003 Barnes & Vidgen, 2002; Petnji et al., 2012; Palacios & Noci, 2008; and Bauer & Scharl, 2006).

And if the theory indicates different web analysis studies, and taking into account that there is no exact formula or general model that evidences a deep evaluation of websites, then it can be proposed that the websites that offer online psychology services be evaluated in times of pandemic, when thousands and thousands of people confined by government decrees must be locked in their homes for long periods, when tolerance, empathy, and other values that must arise in these conditions of

social quarantine are put to the test. And it is there, where many people turn to online psychology services; but there are no true studies that confirm the presence of such sites, that offer guarantees for users, that provide reliability and especially the privacy of personal data. And how not to find a psychological offer on the web even if doubts are raised about the regulation of these new virtual therapeutic models, the verification of the quality of the service provision taking into account pseudo-information, for this reason, studies are required to determine what is the current panorama of each country regarding the offer of this service in online psychology in times of pandemic, for the reason that no relevant studies have yet been recorded regarding the present object of study.

For these theory-based reasons, it is necessary to analyze the websites that provide online psychology services in Latin America and propose through this study a generic indicator for the websites of this category in the provision of psychological services.

2. Methodology

2.1. Participants – Population sample

The present study is based on a quantitative method with statistical validation applied in a total population (N) of 144 cybermedia in the provision of psychology services, which for the study is called cyberpsychology. All the cybermedia analyzed have the main characteristic of a Latin American website.

Table 1. *Population distribution of cybermedia in cyberpsychology.*

Country	Amount	%.	G. Zone	Country	Amount	%	G. Zone
Argentina	26	18.1%	S.A	Honduras	4	2.8%	C.A
Bolivia	5	3.5%	S.A	Mexico	14	9.7%	N.A.
Brazil	22	15.3%	S.A	Panama	4	2.8%	C.A
Chile	16	11.1%	S.A	Paraguay	2	1.4%	S.A
Colombia	28	19.4%	S.A	Peru	5	3.5%	S.A
Costa Rica	1	0.7%	C.A	Puerto Rico	2	1.4%	N.A.
Ecuador	2	1.4%	S.A	Dominican Republic	2	1.4%	C.A
El Salvador	2	1.4%	C.A	Uruguay	3	2.1%	S.A
Guatemala	4	2.8%	C.A	Venezuela	2	1.4%	S.A
Total	106		-		38		144

Source: Self-made

2.2. Survey instrument

The instrument designed for fieldwork was built under the fusion of criteria previously exposed in the theoretical references (Hernández & Fransi, 2014; Codina, et al., 2014; Rodríguez-Martínez, Codina, & Pedraza-Jiménez, 2010; González -López, Bañegil & Buenadicha, 2013), a measurement instrument is presented with 49 variables divided into 10 dimensions according to the theory and a characterization segment with particular information of the cybermedia.

Table 2. *Dimensions of the measuring instrument in the first instance*

DIMENSION	VARIABLE	DIMENSION	VARIABLE
ORIGIN CHARACTERISTICS	Language	VISIBILITY AND	Ranking in Google
	Country		Traffic Rank International (TRI)

	City	POPULARITY	Traffic Rank National (TRN)
	Programming language		Number of indexed pages
INTERNAL QUALITY CHARACTERISTICS	Own domain	SYSTEM	The agility of the web
	Multilanguage	AVAILABILITY	Search system
	Adaptive Navigation		Advanced search system
	User register		Site Map
	Teaching materials	EFFICIENCY	Usability
COMPLEMENTARY CHARACTERISTICS	Virtual chat		Indexing
	Newsletter Subscription		User experiences
	Online shop		Social media
	Payment gateways	TAW	Type A Problems and Warnings
	User rating	ACCESSIBILITY	Type AA Problems and Warnings
SOCIAL MEDIA	News/ Newsletter		Type AAA Problems and Warnings
	Frequently Asked Questions (FAQ)		The total sum of problems
	Facebook	ENGAGEMENT	Engagement
	Twitter		Average user time on WS
	Instagram		Bounce Rate
RELIABILITY AND PRIVACY	Another social network		Organic/paid traffic
	Corporate information		Total linking sites
	Information, Service, and Terms of use		World ranking
	Personal data protection		National ranking

Source: Self-made

27 variables of these dimensions were evaluated in a bimodal way (Freixa, Soler-Adillon, Sora & Ribas, 2014) with the presence and absence of the variable for each dimension of each website. And 33 numerical variables were analyzed under Main Component Analysis and Exploratory Factor Analysis. These processes are specified in the statistical analysis section in the following lines.

2.3. Procedure

The process began with the definition of the search criteria to determine how many websites there are in Latin America that provide online psychological therapy services; For this purpose, the search equation was determined that would allow yielding effective results in the implemented search engines. The search engine selected to perform the tracking was Google Chrome with an incognito window to avoid biasing the search, given that it is the search engine with the largest market share worldwide with 82% in February 2020 and in April of the same year, with greater fury in times of pandemic, Google Chrome remains in first place with 65.5%, being the most used search engine in the world (NetMarketShare, 2020).

Besides, the terms of the search equation were defined by which the web sites of interest for this work would be tracked by Google Chrome in advanced search, separated by the Boolean operator OR (Psychology OR Online OR Service OR Therapy OR Consultation OR Consulting room), a search restricted by region to the country referred to, in this case, each country belonging to Latin America. Finally, the search criteria were completed with the results thrown in the first 10 pages of results for each country. Figure 1.

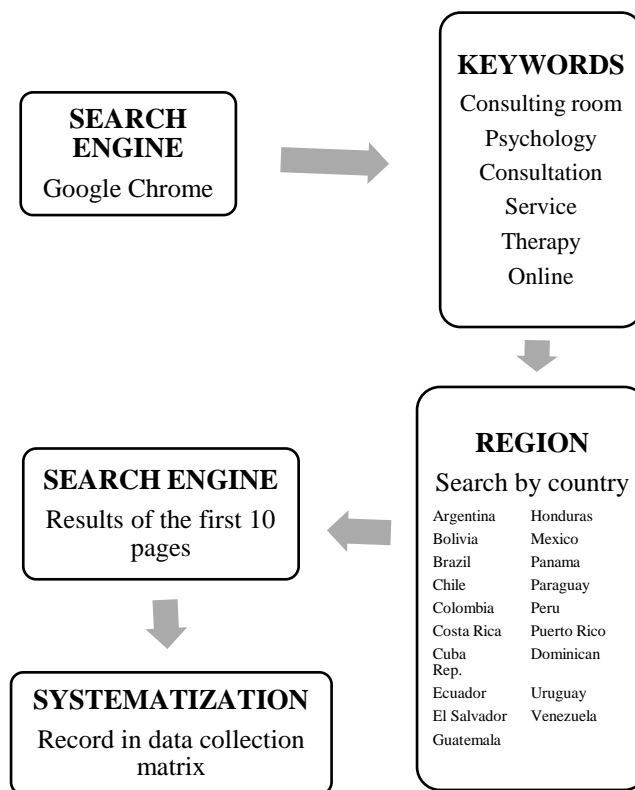


Figure 1. Search equation

The fieldwork was implemented from February 1st to March 26th, 2020, and 149 websites were registered in 19 of 20 countries that belong to Latin America, taking into account that Haiti does not have any website that offers online psychology services, this was discarded in the fieldwork, likewise, 5 websites that did not belong to the object of study were eliminated, since it was identified that such sites were platforms for psychologists' profiles. Subsequently, the registration and systematization of the information of each website found in the information matrix designed in Excel with bimodal qualification (0 or 1, absence or presence) in each variable began, avoiding the subjective biases of the researchers; and other quantitative valuations according to certain variables defined in the said matrix such as positioning in Ranking (PageRank), Trust Flow, among others (See Table 3); their valuations are merely quantitative, some discrete and others continuous.

2.4. Statistical analysis

As mentioned above, the objective of this work aims to build an indicator that measures the websites that provide online psychology services in Latin America, among other subscripts that measure the information extracted from the objective variables strongly correlated in each of the found and duly systematized websites.

Each systematized URL was analyzed by various websites (Table 3) or ICT tools scientifically validated in other studies (González-López et al., 2013; Rodríguez-Martínez, et.al., 2010; De Andrés, Lorca & Martínez, 2010; Miranda & Bañegil, 2004; Islam and Tsuji, 2011; Won et al., 2010; Takahashi & Kitagawa, 2009, Tanaka et al., 2010; Yamamoto & Tanaka, 2011) to analyze the different variables proposed in this research.

Table 3. *ICT resources for the evaluation of each website*

Resource	Description	URL
W3Techs - World Wide Web Technology Surveys	Analyzes the use of technologies in the development of the website, the use of the programming languages of each site; Likewise, it analyzes the servers where the websites, the web server, hosting provider, mail service provider, language, among others, are hosted.	https://w3techs.com/
Google	Google search engine in incognito mode, placing in the search engine each URL preceded by the word "site: or link:" in this way, the number of results are obtained in seconds.	https://www.google.com/ examples: <i>site:https://www.funlam.edu.co/</i> <i>link:https://www.funlam.edu.co/</i>
Pingdom	Upload time / speed, total file size, number of responses, among others.	https://tools.pingdom.com/
Taw	Web Accessibility Test of the information and communication technology center (CTIC by its acronym in Spanish). There, information is collected on the errors of a website discriminated in the number of Warnings and number of Problems under three levels of adequacy: A; double A (AA), and triple A (AAA).	www.tawdis.net/
Alexa Ranking	The popularity of a website in the world and national ranking offers 1 as an optimal score. Alexa offers other metrics such as engagement, keywords, bounce rate, among others.	https://www.alexa.com/
Google PageRank	Ranking of websites in terms of popularity through a score from 0 to 10 where 10 is the best score; Right there you get metrics of Indexing, Domain Authority, Trust Flow, Mention Flow, etc.	https://checkpagerank.net/

Source: Self-made

Taking into account that the instrument contains 27 dichotomous variables and 33 numerical variables, these two segments were analyzed separately and different procedures were carried out; the segment of dichotomous variables was subjected to internal reliability studies (George & Mallery, 2003; Hernandez-Sampieri, Fernández & Baptista, 2014) using Crombach's Alpha statistical test (α), the composite reliability coefficient (CR) in which values greater than .70 are considered optimal according to Gefen and Straub (2005). The corresponding measures of central tendency (M) and dispersion (DT) were calculated.

Besides, with the segment of numerical variables, to achieve these objectives, we proceed to implement multivariate analysis as the main technique, exploratory factor analysis under the main-components technique, taking into account its ability to summarize a high volume of information, allowing to identify the different dimensions or most significant constructs for the study and thus avoid subjective considerations.

Initially, the adequacy of the sample of the correlation matrix is verified, verifying the possible factorization with the multivariate technique and normalization with the KMO test according to the Kaiser-Mayer-Olkin criterion (suitability of the data) and extraction of components (Guisande, Vaamonde & Barreiro, 2011). Then, we proceed to eliminate those variables with low extractions following Hair et al. (1999) and Pérez (2004); These extractions express the proportion of variance of a variable explained by the selected factors. In this sense, the KMO improves and the Factor Analysis technique is applied again to the remaining variables.

3. Results

To carry out a judicious analysis and taking into account the construction of the instrument used for the systematization of the information of the analyzed websites, the first results obtained correspond to the 26 retrachoric (dichotomous) variables, which were subjected to descriptive statistics and with measures of central tendency, which allow the analysis of the frequencies of each variable and their different distributions (*DT*), averages (*M*), asymmetries (*A*), and kurtosis (*K*).

Table 4. *Descriptive statistics – retrachoric variables (dichotomous) (n=144)*

Item	<i>M</i>	<i>DT</i>	<i>A</i>	<i>K</i>
3_Own Domain	.95	.216	-4.242	16.222
4_Multilanguage	.11	.315	2.501	4.315
5_Adaptive Navigation	.72	.449	-1.003	-1.009
6_User Registration	.31	.465	.818	-1.351
7_Teaching Material	.22	.417	1.35	-.179
8_Cookies	.19	.397	1.56	.441
9_Virtual Chat	.13	.332	2.292	3.298
10_Subscription to Newsletters	.15	.361	1.951	1.83
11_Virtual Store	.35	.48	.616	-1.643
12_Payment gateways	.38	.488	.491	-1.784
13_Valuation in Stars	.13	.332	2.292	3.298
14_News	.28	.449	1.003	-1.009
15_FAQ	.31	.462	.853	-1.29
17_Facebook	.71	.456	-.926	-1.158
18_Twitter	.4	.492	.401	-1.866
19_Instagram	.41	.493	.371	-1.889
20_YouTube	.26	.442	1.083	-.84
21_Another Social Network	.52	.501	-.084	-2.021
23_Corporate Information	.89	.315	-2.501	4.315
24_Service Information and Conditions of Use	.36	.482	.584	-1.682
25_Protection of Personal Data	.35	.478	.649	-1.602
26_Customer Experience	.27	.446	1.042	-.927
27_Search System	.46	.5	.169	-1.999
28_Advanced Search System	.07	.255	3.423	9.855
29_Website Map	.31	.462	.853	-1.29

Source: Self-made

Table 4 shows the descriptive results, and to minimize the error and increase the validity of the instrument and its reliability, variable 16 (The website has social networks) was eliminated since, for reasons that its corrected correlation is of negative coefficient; Consequently, the correlation between the items improves substantially and yields a very good level of reliability with a Crombach's alpha of ($\alpha = .701$) with 25 of the 26 items, categorizing the instrument as optimal and reliable according to the criteria of George and Mallery (2003); Hernandez-Sampieri, Fernández & Baptista, 2014; Gefen and Straub (2005).

According to the results, the value of the total average is ($M_t = 0.3634$) in a range from 0 to 1, obtaining the lowest value in ($I_{28} = .07$) and the highest ($I_3 = .95$); This indicates that a high percentage of websites do not have most of the items analyzed, degrading their quality, and the variable with the highest frequency of presence is their own domain (I_3). In terms of variances, there are low deviations, taking into account that their range oscillates between $DT = .216$ and $DT = 501$ in items I_3 and I_{21} respectively, indicating very low data variability. On the other hand, atypical

information was found showing that most of the data are positive, minimum and maximum, corresponding to items I3 = -4.242 and I28 = 3.423.

Table 5. Rotated components matrix – Varimax rotation – Total explained variance. N=144

Factors	Components							
	Reagents	GPrTS	AP	AW	BGPr	AE	SILt	Extraction
	39VPP	0.943						0.939
	43VPP	0.935						0.917
Google	38VPP	0.935						0.917
PageRank,	40VPP	0.917						0.897
and Traffic	42C	0.88						0.817
Sources	41C	0.849						0.764
	44C	0.849						0.766
	55Ef	0.459						0.568
Number of	36A		0.984					0.992
Problems A-	32A		0.983					0.989
AA-AAA	30A		0.982					0.988
	34A		0.969					0.966
Number of	37A			0.988				0.998
Warnings A-	35A			0.973				0.953
AA-AAA	31A			0.96				0.942
	33A			0.959				0.975
	47I				0.963			0.963
Baclkns GPr	46I				0.962			0.966
	45I				0.862			0.881
Alexa	53Eg					0.753		0.61
engagement	52Eg					0.578		0.562
	54Eg					0.55		0.648
Sites that link	49I						0.79	0.735
and Loading								
Time	57Ef						-0.593	0.569
	Self-value	28.071	16.619	16.061	12.207	6.729	4.979	84.666
	%							
	Variance	1.16963	0.69246	0.66921	0.50863	0.28038	0.20746	
Kaiser-Meyer-Olkin sampling adequacy								0.702
							X ²	6941.6
Bartlett's Sphericity Test							gl	276
							Sig.	0.000

Source: Self-made

However, when the 32 numerical variables were subjected to the Exploratory Factor Analysis (EFA) study, extractions of the items with very low coefficients below (<.5) were detected (Ferrando & Anguiano-Carrasco 2010; González et al., 2013; Lloret-Segura et al., 2014) these items were I22, I45, I48, I49, I50, I51, I58, I59, I60, and I61, which were eliminated to give a better result in the extracted variance; These extractions express the proportion of variance of a variable explained by the extracted factors. In this sense, the results in KMO = .702 (greater than .6) and Bartlett's Sphericity Test = .000 (less than .05) (Table 5), so the null hypothesis is contrasted, therefore the factorial model is adequate to explain the phenomenon.

When applying the multivariate technique of main components (Guisande, Vaamonde & Barreiro, 2011) with Varimax extraction to determine the level of correlation between the variables, there were 6 components with an extracted variance of 84.67%, the component that best explains the

phenomenon is the Component 1 called Google PageRank and Traffic Sources (GPrFT) with 28.07% representing most of the information (Table 5).

3.1. Online Psychology Measurement Indicator - IMPOL

The IMPOL indicator is a general indicator constructed from the variables selected in the previous EFA, and is expressed by the following mathematical formula:

$$IMPOL = \sum_{i=0}^n S J_i \times \%^{Apriori}$$

1. Factor 1 is composed of results obtained from Google PageRank and Traffic sources to a greater extent, this factor was called GPrTS.
2. Factor 2 is composed of the results obtained by the variables that refer to the problems under the three levels of adequacy (A, AA, and AAA), this factor was called Adequacy Problems - AP.
3. Factor 3 is composed of the results obtained by the variables that refer to the warnings under the three levels of adequacy (A, AA, and AAA), this factor was called Adequacy Warnings - AW.
4. Factor 4 is made up of the results obtained by the variables that refer to Google PageRank Backlinks, this factor was called BGPr.
5. Factor 5 is made up of the results obtained by the variables that refer to the Alexa Engagement indicators, this factor was called AE.
6. Factor 6 is composed of the results obtained by the variables that refer to the indicators of Sites that link and the Loading time, this factor was called SILt.

Table 6. Top 10 websites according to the IMPOL Online Psychology indicator. $n=144$

#	IMPOL	WEBSITE NAME	COUNTRY
1	0.4629	Integra Médica	Chile
2	0.4918	Dr.consulta	Brazil
3	0.5670	Regional Council of Psychology CRP 3	Brazil
4	0.5860	Zen Klub	Brazil
5	0.5919	Psicología viva	Brazil
6	0.6000	AMAPSI	Mexico
7	0.6166	FEPPA Federation of psychologists of the Republic of Argentina	Argentina
8	0.6214	AMADAG	Chile
9	0.6238	Online Psychology CEPSI Honduras	Honduras
10	0.6551	Mundo Psicólogos	Argentina
11	0.6740	IEPP	Colombia

Source: Self-made

When applying the IMPOL indicator to each of the URLs under study in this work, the results obtained by each one are standardized, with a score ranging from 0 to 1, with 0 being the best result, and the furthest result to 0 indicates the worst result. In this order of ideas, table 6 identifies the first 10 URLs (websites) with the best scores against the IMPOL indicator. As can be seen, 2 websites were found that offer online psychology of Chilean nationality, 4 Brazilian, 1 Mexican, 2 Argentinian, and 1 Honduran (Table 6).

Taking into account the review of the literature, it is concluded that the components are related by their conceptual content in these factors, and in this way, the dimensions are reconfigured into only three factors or sub-indicators as described below:

Factor 1 GPrTS and factor 4 BGPr, these factors refer to the web positioning, assuming between them an explained variance of the phenomenon of 40.27%. In this way, a new sub-indicator called "Web Positioning Indicator - WPI" is reconstructed.

- WPI indicator = .28071 (GPrTS) + .12207 (BGPr) with a level of importance representativeness of 47.6%

Table 7. Top 10 websites according to the WPI Web Positioning Indicator.

#	WPI	WEBSITE NAME	COUNTRY
1	0.1381	Dr. Consulta	Brazil
2	0.1460	Integra Médica	Chile
3	0.1481	CES/JF	Brazil
4	0.1583	Regional Council of Psychology CRP 3	Brazil
5	0.1681	FEPRA Federation of psychologists of the Republic of Argentina	Argentina
6	0.1741	AMAPSI	MEX-
7	0.1767	Zen Klub	Brazil
8	0.1936	Psicología viva	Brazil
9	0.1959	Psicólogos	COL-
10	0.1969	Mundo Psicólogos	Argentina
11	0.1976	AMADAG	Chile

Source: Self-made

Factor 2 AP and factor 3 AW refer to accessibility, assuming between them an explained variance of the phenomenon of 32.68%. In this way, a new sub-indicator called "Accessibility indicator AI" is reconstructed.

- AI indicator = .16619 (AP) + .16061 (AW) with a level of importance representativeness of 38.6%

The values obtained on each website are interpreted in the opposite way than the other sub-indicators, the value farther from 0 has greater accessibility, given by its condition of the indicators of problems and warnings, as it in general terms produces very high figures for each URL.

Table 8. Top 10 websites according to the Accessibility Indicator - AI.

#	AI	WEBSITE NAME	COUNTRY
1	1.0213	InAltum Personal Growth Clinic	Argentina
2	1.2569	Virtual Therapy-Online Psychologists	Colombia
3	1.2569	Oriéntate	Dominican Rep.
4	0.6808	Psicólogos la Guía	Argentina
5	0.4300	Juan Roque	Argentina
6	0.2005	La casa Ámbar	Panama
7	0.1816	Psicología On-lln CEPSE	Honduras
8	0.1757	Tu psicóloga	Colombia
9	0.1667	Adriano Gosuen	Brazil
10	0.0973	Web therapy	Argentina

Source: Self-made

Factor 5 AE and factor 6 SILt refer to Engagement and Efficiency, assuming between them an explained variance of the phenomenon of 11.71%. In this way, a new sub-indicator called "Efficiency Indicator for Engagement EIE" is reconstructed.

- EIE indicator = .0673 (AE) + .0498 (SILt) with a level of importance representativeness of 13.8%

Table 9. *Top 10 websites according to the Efficiency Indicator for Engagement EIE.*

#	EIE	WEBSITE NAME	COUNTRY
1	0.0211	CFP	Brazil
2	0.0492	CEPSI Online Psychology	Honduras
3	0.0568	Integra Médica	Chile
4	0.0679	AMADAG	Chile
5	0.0750	Strategic psychology	Colombia
6	0.0756	Chile psicólogos	Chile
7	0.0773	Psicología viva	Brazil
8	0.0874	R&A Psicólogos	MEX-
9	0.0902	Dr. Consulta	Brazil
10	0.1256	Zen Klub	Brazil

Source: Self-made

Of all the analyzed Latin American countries that have websites to provide online psychology, it was classified in the form of a ranking with the obtained results, since all 144 existing websites with this condition were studied, avoiding bias. Table 10 shows the global results with the application of all the indicators after determining the averages for each country, reference is made to the global IMPOL indicator where the best-valued countries were identified.

Table 10. *Position of nationality against the proposed indicators.*

COUNTRY	IMPOL	WPI	AI	EIE
Bolivia	0.0079	0.2780	0.0185	0.0002
Brazil	0.3749	0.1143	0.0230	0.0463
Honduras	0.4722	0.1471	0.0373	0.0482
Ecuador	0.6832	0.2190	0.0290	0.1221
Chile	0.7931	0.2549	0.0210	0.1922
Argentina	0.8165	0.2489	0.0219	0.4553
Mexico	1.0799	0.3688	0.0136	0.4921
Colombia	1.1239	0.3961	0.0234	0.4266
Dominican Rep.	1.6868	0.5742	0.0382	1.1714
Peru	2.0375	1.0993	0.0307	1.6783
Puerto Rico	2.0860	1.1624	0.0248	1.7129
Panama	2.2340	1.5142	0.0135	0.7765
Venezuela	2.4579	1.0960	0.0476	1.0624
Paraguay	2.6796	2.5655	0.0204	1.6726
El Salvador	2.7222	1.2951	0.0481	1.8673
Uruguay	2.7905	1.5315	0.0487	0.6774
Costa Rica	3.3720	2.3016	0.0577	1.2045
Guatemala	3.6351	2.6283	0.0470	2.8855

Source: Self-made

Finally, Table 11 presents the 6 countries with the best results obtained after the application of each indicator to each URL and from each country, it must be borne in mind that not all countries have the same amount of analyzed URLs and for this reason, Bolivia is in the first place in Table 10, as this country has only 5 websites in contrast to countries such as Brazil, Argentina, and Colombia, which have 22, 26, and 28 websites respectively, which provide online psychology services in times of pandemic.

Table 11. *The position of nationality according to the 144 websites according to the proposed indicators.*

COUNTRY	IMPOL	WPI	AI	EIE	Average	Scale
Argentina	2	2	1	5	2.50	2
Brazil	1	1	5	1	2.00	1
Chile	3	3	-	2	2.67	3
Colombia	5	4	2	3	3.50	4
Honduras	4	-	3	4	3.67	5
Mexico	6	5	-	6	5.67	6
Panama	-	-	4	-	4.00	-

Source: Self-made

4. Discussion

Using the indicators proposed in this work, the Online Psychology Measurement Indicator (IMPOL), the Web Positioning Indicator (WPI), the Accessibility Indicator (AI), and the Efficiency Indicator for Engagement (EIE), the main websites in Latin America that offer online Psychology services have been identified. Thus, Brazilian websites are the ones with the best results in Latin American countries.

The present work shows similarities with studies properly mentioned in the state of the art of research, it was possible to determine the concepts related to the studies carried out by Hernández and Fransi, (2014); Codina, et al., (2014); Rodríguez-Martínez, Codina, and Pedraza-Jiménez, (2010); González-López, Bañegil, and Buenadicha, (2013), from which the variables that best adjusted to the proposed model and for the online psychology sector were subtracted, taking into account the convenience of the study and the results obtained by the implemented statistical method. On the other hand, qualitative and quantitative evaluation variables proposed by the studies of these same studies were analyzed, obtaining optimal results that satisfy the proposed objectives.

The results confirm that, although in the implemented Indicators and without maintaining proportionality between the number of websites that provide the same service, it is the countries that have the least online psychology websites in times of pandemic that show unfavorable results; In this way, it is evident that the greater the offer of the online psychology service, the greater the effort will be made by the psychologists who provide this type of virtual services, who must offer greater efficiency, accessibility, and web positioning to their potential audiences, taking into account the high competition in the market in the field of online psychology.

Despite the pandemic conditions that the world is currently experiencing, and the latent need of people to access psychological therapies online or by teleconference, websites lack several aspects of web quality if the index proposed by González et al., (2013) and Rodríguez-Martínez et al., (2010) is applied; This phenomenon is presented by the great increase in web platforms that with their developments and pre-established web structures do not boost the diversification of the sector in

aspects of web quality, security, accessibility, and web positioning, especially in this last aspect, which showed very low results because of the 144 websites analyzed, only 4.86% managed to pass the barrier of half (5) of the Ranking in a count from 0 to 10.

5. Conclusions

It is concluded that the offer of services in online psychology is not the most reliable and lacks resources that favor the purchase of these services reliably and safely, it must be borne in mind that for the number of countries analyzed there is no satisfactory offer of these services in terms of quantity, except for Colombia, Brazil, Argentina, and Chile, which are the ones that have the most offer of this type of online services, especially in the pandemic time, which is when greater coverage is required in the provision of this virtual service; Although recent studies confirm that the use of videoconferencing has been low in times of the pre-COVID-19 pandemic, this type of service has been growing substantially during the crisis (Helou et al., 2020).

The generation of new websites in online psychology is important, but more important is the generation of web positioning strategies that professionals can tactically implement to be competitive in the virtual market, and those websites that currently exist must strengthen their accessibility, security, popularity, visibility, and web positioning to generate trust in their target audiences. For this reason, an investment must be required for experienced web development to optimize software resources and carry out an adequate individualized development, that is, with unique characteristics that generate value and thus enhance competitiveness.

The present study statistically validates the indicators presented here, all the websites that provide the service of this study were analyzed, the factor analysis was methodologically implemented that allowed the design of exclusive indicators for this specific sector, the dichotomous variables were validated, yielding a satisfactory alpha to determine that the instrument is reliable and consistent. In the same way, it is suggested for future research to consider analyzing another instrument that complements the present study from the content area and thus expanding the range of analysis to implement an analytical model of websites for the online Psychology category. It is suggested to implement other search engines so as not to ignore the findings in future studies.

Finally, it is proposed that the proposed indicators be implemented in other sectors, specifically in Latin America, to further validate the indicators, and this is the opportunity to study the perceptions of users and strengthen the indicators through SEM structural equations. It should be borne in mind that the proposed indicators are a pilot evaluation of online psychology platforms or services in terms of user protection and possible fraud.

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