



Research Article

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# Exploratory Factorial Model of Attitude Toward Violence in the Covid-19 Era

Cruz García Lirios<sup>1\*</sup>, Jaime Lemus Tlapale<sup>2</sup> and Lidia Amalia Zayas Esquer<sup>3</sup>

<sup>1</sup>Autonomous University of Mexico City, USA

<sup>2</sup>Universidad Autónoma de Tlaxcala, USA

<sup>3</sup>University of Sonora, USA

\*Corresponding author: Cruz García Lirios, Autonomous University of Mexico City, USA.

**To Cite This Article:** Cruz García Lirios\*, Jaime Lemus Tlapale and Lidia Amalia Zayas Esquer. Exploratory Factorial Model of Attitude Toward Violence in the Covid-19 Era. *Am J Biomed Sci & Res.* 2023 20(3) AJBSR.MS.ID.002707, DOI: [10.34297/AJBSR.2023.20.002707](https://doi.org/10.34297/AJBSR.2023.20.002707)

**Received:** 📅 September 04, 2023; **Published:** 📅 October 19, 2023

## Abstract

The treatment adherence is a central hub in the health agenda. In the framework of the SARS CoV-2 pandemic, it is necessary to predict this phenomenon. The objective of the present work was to contrast a model of structural equations. A confirmatory, psychometric and cross-sectional work was carried out with a selection of 100 students, considering their participation in social service and professional practices in public hospitals in central Mexico. A factorial structure was found that explained 62% of the total variance, suggesting the contrast of the model in other scenarios.

**Keywords:** Covid-19, Respiratory diseases, Self-care, Treatment adherence

## Introduction

As of April 2023, 100 million have been infected and three million have died worldwide from the SARS CoV-2 pandemic and the Covid-19 disease so far [1]. In Mexico, even when minor records are recognized by the health authority, 170,000 people have died. The vaccination policy followed the United Nations Covax mechanism [2]. It is a multilateral agreement where governments contribute a fund that is distributed in accordance with the criteria established by the World Health Organization. It is about the purchase of carpets to immunize 10% to 50% of the population, following a logic of availability, production and equitable distribution among the 34 signatory countries. In addition, Mexico has negotiated directly with multinationals and the governments of Russia and China for the handling of vaccines. 75million were purchased from the Oxford company, 20 million from Covaxx, 15 million from Pfizer and 30million from Cansino, although it has made agreements with others based on compliance with the agreement, availability and supply of the vaccines. The Ministry of Health has established medical personnel as a priority for immunization until February 2021, followed by the elderly sector until April, people between 50 and

59 years old until May, 40-49 years old until June and the rest until March 2023.

However, information that discredits the government has propagated the association between vaccines and deaths without documenting studies, reducing the data to a coincidence and without considering the risks of exposure to immunization with comorbidities [3]. Therefore, the empirical test of a model that allows studying the effect of unscientific information on treatment adherence decisions is essential to observe institutional health responses.

Bustos Juarez, Garcia (2022) showed that the rules of the labor context had an impact on personal care and the prevention of work accidents, mediated by the perception of risks and internal security policies [4]. Beliefs and attitudes towards self-care are determinants of treatment adherence. In the case of respiratory diseases, this process is attenuated by the perception of risk that is proposed to elucidate in this study.

García Lirios (2021) suggest that treatment adherence is reduced by agents external to social and family support that configure

adherence to barriers. Evaluations may be favorable when it comes to diseases that do not warrant an extended stay [5]. Positive or negative evaluations of the disease can be supplemented by decisions about personal care, family, partner, and other groups. Intentions are another attitudinal dimension that has not been explored, described, or even explained. The state of knowledge indicates that there are two theories in charge of intentions.

Juarez Najera, *et al.*, (2020) found that age and adverse reactions to treatment reduce adherence and increase adherence to barriers [6]. The uncertainty of the risks favors the search for low costs and high benefits, compared to the certainty of risks that favors the search for low costs and high benefits. That is, when diseases are uncertain, people run the risk of obtaining costly solutions.

García Lirios, *et al.*, (2022) demonstrated that treatment adherence is related to the quality-of-life expectations as triggers of risk are beliefs and intentions about a disease. In this sense, the present study explains the uncertain attitudes towards respiratory diseases in relation to the groups in which the individuals are immersed [7].

The study's contribution to the state of the art lies in the contrast of a model that studies the determinants of treatment adherence [8]. Consequently, the modeling and contrast of the relationship between the variables integrates the findings of other investigations. Therefore, the objective of the research is to show the prevalence of psychosocial determinants of public health focused on respiratory diseases in four main lines of knowledge related to regulation, policies, health promotion. Are there significant differences between the dimensions of treatment adherence reviewed in the literature as effects of non-scientific information with respect to the contrast of the model proposed in the present work?

The premise that guides the present work indicates that treatment adherence had been considered as part of a social, work and family support structure in rehabilitation, but it was not considered as an effect of the unscientific information disseminated in the media. electronic networks such as Facebook, Youtube, Twitter and WhatsApp [9]. In this sense, the diversification of factors that make up the adhesion process implies the convergence of the media spheres with the personal, family, work and institutional spheres [10]. In this way, the adherence structure will include dimensions related to each area, as well as the allusion to their hybrid combinations such as vaccines, their percentage of effectiveness and the attribution to the government that people associate with the quality of immunization.

## Method

### Design

Since the pandemic led to a strategy of confinement and prolonged social distancing, a cross-sectional design was chosen. In addition, a psychometric study was carried out to establish the cognitive and behavioral variables associated with the rejection or acceptance of immunization.

### Sample

A non-probabilistic selection was made of 100 students (56% female and 44% male,  $M=21.2$   $SD=1.23$  of age and  $M=9,872.12$  USD  $SD=234.35$  USD per month) from a public university. The selection criterion was to belong to the system of practices and social service in organizations and institutions with and without profit aims of the municipality of Chimalhuacán, State of Mexico.

### Instrument

The scale of treatment adherence of chronic degenerative diseases was used, which includes 40 statements (elements) around regulations ("The treatment of Covid-19 is effective in traditional people"), values ("A person who follows the recommendations of experts Covid-19"), beliefs ("Covid-19 affects crazy people"), perceptions ("Vaccine Sputnik V has more risks than benefits"), knowledge ("Covid-19 affects decisions"), skills ("Covid-19 can be controlled with a balanced diet"), attitudes ("Vaccine Sputnik V affects older adults"), decisions ("I will vaccinate me against Covid-19"), intentions ("Choose vaccine Sputnik V pair to prevent the Covid-19") and behaviors ("I get vaccinated Covid-19").

### Procedure

The opinion was made using the Delphi method, as well as the symptom technique for the analysis of evaluations by expert judges. In three rounds the content of the items was evaluated.

- a) Review phase and instrument grade reagents.
- b) Phase comparison scores experts.
- c) Phase review or re a signature qualification.

The participants were interviewed and surveyed in the university facilities. The access to the respondents was made from the database of the degree in medicine, considering the system of professional practices and social service of the university and the collaborating institutions. They were informed that the results of the investigation would neither positively nor negatively affect their school situation. They were asked to answer questions and statements honestly. They were invited to consult the results in the final report of the research group. The data were processed in the Statistical Package of Social Sciences (SPSS) and the Structural Moment Analysis Software (AMOS) in versions 10 and 6.0.

The instrument was validated with 100 students from the same institution. After establishing the internal consistency that reached a value higher than the essential minimum (alpha of .805) and the ten factors, its factorial structure was confirmed with 100 practitioners and professional servers.

### Analysis

Cronbach's alpha parameters, KMO coefficients, Bartlett's test, factorial weights, Pearson correlations, covariances "phi", "beta" and "Range" weights, as well as fit and residual indices were used.

in order to contrast the model of specified relationships with the observed data. The kurtosis value close to unity was assumed as evidence of the normal distribution of the responses of the respondents with respect to the statements that measure the study variables in an instrument with response options and interval measurement levels.

The KMO coefficients are greater than 0.600 and the Bartlett test was assumed with a significance level of less than 0.050 as evidence of product-moment correlations that facilitated the exploratory factor analysis of principal axes with promax rotation. Subsequently, factorial weights greater than 0.300 were considered as evidence of the maximization of the variance in terms of the factors derived from the exploratory analysis. Percentages of explained variance greater than 0.20 were assumed as evidence of acceptance of the null hypothesis. It was assumed that a Cronbach's alpha value greater than 0.60 was enough to demonstrate the internal consistency of the indicators with respect to the general scale and the subscales. The product-time correlation of greater than 0.90 was considered as evidence of collinearity and multicollinearity, which means that the elements are similar in terms of their content.

The values of Pearson  $r$  close to unity and zero were discarded from further analysis because they represent relationships collinear or counterfeited. On the other hand, those values higher than 0.30 and lower than 0.90 were assumed as evidence of dependency relationships. Values of "phi" between 0.30 and 0.90 were identified as evidence of dependency relationships in the case of categorical variables or in combination with continuous variables.

The "beta" values between the exogenous and endogenous variables between 0.30 and 0.90 were assumed as evidence of dependency relationships. Similarly, "gamma" values between endogenous variables close to zero or to unity were discarded from subsequent analyzes. The Goodness of Fit Index (GFI) close to unity was assumed as evidence of fit and acceptance of the null hypothesis. On the contrary, values lower than 0.975 were considered as evidence of rejection of the null hypothesis and acceptance of the alternative hypotheses.

Values close to zero were assumed as evidence of fit between the specified relationships and the data obtained, therefore the null hypothesis of fit between both models was accepted. On the contrary, values greater than 0.007 were considered as evidence of the rejection of the null hypothesis.

## Results

The values that indicate the reliability and validity of the instrument that measures treatment adherence reached values higher than the essential minimums of .60 and .300 respectively. The essential reliability and validity values for the analysis of the instrument's consistency and its measurement from the convergence of responses to the items. The results indicate that the instrument is consistent in its measurement of the dimensions established in the state of the art, as well as in the registration of responses to the items. That is, the reliability and validity values suggest that the instrument meets the prerequisites for more detailed and specific analyzes such as sphericity and the suitability of the subscales to the study sample (Table 1).

**Table 1:** Kaiser-Meyer-Olkin test.

	MSA
Overall MSA	0.790
r1	0.738
r2	0.777
r3	0.897
r4	0.864
r5	0.574
r6	0.556
r7	0.825
r8	0.880
r9	0.894
r10	0.815
r11	0.804
r12	0.666
r13	0.733
r14	0.748
r15	0.814
r16	0.824

Adequation and Sphericity ( $\chi^2=435.12(245df)p=0.000;KMO=0.567$ )  
**Method:** main axes, Rotation: **Promax:** Norms (16% of the total variance explained and alpha = 0.724), Values (13% explained total variance and alpha = 0.789), Beliefs (10% total variance explained

and alpha = 0.761), Perceptions (7% of total variance explained and alpha = 0.829), Behavior (5% of total variance explained and alpha = 0.895). The five factors explained 62% of the variance of the structure (Table 2).

**Table 2:** Factor Loadings.

	Factor 1	Factor 2	Factor 3	Factor 4	Uniqueness
r1		0.85			0.136
r2	0.995				0.056
r3	-0.965				0.043
r4	0.895				0.207
r5				0.937	0.18
r6			1.047		0.029
r7	-0.928				0.07
r8	0.831				0.064
r9	-0.807				0.268
r10	0.664		-0.45		0.066
r11		0.842			0.281
r12	0.602			-0.594	0.121
r13		0.764			0.211
r14		-0.868			0.218
r15			0.419		0.312
r16		0.616	-0.485		0.353

**Note\*:** Applied rotation method is promax.

Ten factors prevail in treatment adherence. In other words, the orthogonality of the structure suggests that it is a multiple and diverse phenomenon, not subject to a universal protocol. Once the validity structure was established, the relationship structure was estimated considering the correlations between the factors, as well as the covariances to observe the incidence of other factors

not included in the model. That is, the correlation and covariance values suggest that nine variables are determinants of treatment adherence behavior. This is so because the process of adherence to immunization through vaccines involves at least ten variables in decision-making, acceptance and application of the vaccine (Table 3).

**Table 3:** Factor Characteristics.

	SumSq. Loadings	Proportion var.	Cumulative
Factor 1	5.926	0.370	0.370
Factor 2	3.539	0.221	0.592
Factor 3	2.170	0.136	0.727
Factor 4	1.753	0.110	0.837

It is a relationship of trust between the rulers and the ruled that results in co-management ( $p<.01$ ;  $**p<.001$ ;  $***p<.0001$ ). The structure of relations shows the emergence of a common factor that identifies literature share s treatment adherence to explain the deliberate, planned and systematic social and family support that supports the decision to carry out medical recommendations. To establish the axes, trajectories and relationships between the variables, we proceeded to estimate the effects of the deliberate process on the decision and action of treatment adherence in a

model of structural equations. In other words, the structure of relationships between factors and indicators suggests that treatment adherence is a complex phenomenon of trust between authorities and respondents. It is an immunization process that prioritizes the vaccination of students as they are considered strategic to mitigate the pandemic. In this administrative and institutional sequence, treatment adherence is essential to reverse the information that vaccines are not safe (Table 4).

**Table 4:** Factor Correlations.

	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	1.000	-0.146	-0.183	0.003
Factor 2	-0.146	1.000	0.110	-0.078
Factor 3	-0.183	0.110	1.000	-0.551
Factor 4	0.003	-0.078	-0.551	1.000

The fit parameters and residuals [ $\chi^2=16.35$  (17gl)  $p=0.000$ ; GFI=0.925; CFI=0.975; NFI=0.975; RMSEA=0.003; RMR=0.002; R2=0.576] suggest the non- expulsion of the null hypothesis relative to the significant differences between the structure of treatment adherence reported in the literature with respect to the structural equation model established in this work. The adjustment of the theoretical structure with respect to the proposed model suggests that the respondents are in a public health sector organized to reduce the effects of the information that refers to the inefficiency of the vaccines.

## Discussion

In reference to the studies that conceptualize treatment adherence as independent of decision-making and its cognitive determinants, the present study has shown that they are rather part of a multifactorial process. Although cognitive factors are determinants of decisional and behavioral factors, adherence is considered an integral phenomenon where each factor affects another in order to structure an individual or group response to an illness or accident.

*García Lirios (2022)* validated the Medicinal Beliefs Questionnaire and the Medication Appropriation Scale, found beliefs as predictors of adherence to treatment (,90) [11]. In the present work, the ten dimensions included beliefs as a factor indicative of adherence, considering that it is a process prior to a disease and its treatment that would affect treatment behavior. In this sense, the environment of the pandemic would modify the relationship between general beliefs with a specific self-care behavior in distancing and confinement, as well as interactive when requesting medication, supply and application of the medication.

*García Lirios (2021)* demonstrated the negative effect of treatment adherence in the use of antiretrovirals from the distancing and confinement of people, mediated by social, family and institutional support [12]. In the present work, it was shown that the ten dimensions explain 62% of the total variance, but the inclusion of the frequency of use of the drug and the environment of its use would allow increasing the percentage of explained variance. A second-order factorial analysis will make it possible to regroup the first-order factors and make room for other subscales that correlate with the other subscales and indicators.

*García Lirios (2021)* measured the knowledge, attitudes and practices of treatment adherence in the Covid-19 era. They demonstrated contingent relationships between the three variables regarding Covid-19 prevention. In the present study, it was observed

that around prevention and immunization, the three variables are associated, configuring a second-order construct, although knowledge and attitudes could be modeled as determinants of practices.

Research lines related to the conception of adherence as a second-order factor, reflected by first-order cognitive and behavioral factors, will allow anticipating rehabilitation scenarios from social, family, individual and cognitive support. Confirmatory factor analysis of a structure governed by a second order factor will explain the influence of the environment mediated by evaluative, normative, cognitive factors. attitudinal, motivational and decisional.

## Conclusion

The structure of treatment adherence reported in the literature shows the importance of quality of life, socioeconomic variables and reactions to medical treatment as determinants, but in the present study, it was shown that these variables are mediators of social life and group norms regarding whether or not to adhere to treatment.

In the present work, a deliberate, planned and systematic sequence of variables related to social and family support has been established that, when interacting with cognitive variables, suppose a stable structure of treatment adherence. S and found a structure 10 factors around which the reflected adherence to the treatment by a sequence from the norm behavior. That is, treatment adherence involves a series of principles that guide behavior, mediated by social, family, and cognitive factors. Treatment adherence is reflected in the structure of social, family and cognitive resources without which the sequence of treatment adherence would be impossible.

The lines of research on treatment adherence as a result of the mediation of cognitive factors from the social and socioeconomic dimensions will allow anticipating the barriers that inhibit it. Regarding the logical sequence of deliberation, planning and systematization, it is necessary to point out the sociodemographic variables that accentuate the barriers or treatment adherence. It is suggested to perform opinion mining, the Delphi method and the symptoms technique that allowed the construction of the instrument, as well as the content validity. If internal consistency refers to the degree of understanding of the content of each item, the three phases of information processing are recommended.

Therefore, the empirical test of the model in other scenarios and samples will allow to make a diagnosis of the confidence of the users of the health service towards their health and political au-

thorities with respect to the management of the pandemic, as well as the immunization of the population, mainly the application of vaccines to counter the unscientific information disseminated in the media and electronic networks.

## Acknowledgement

None.

## Conflict of Interest

None.

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