Factors predicting non-adherence to Covid-19 guidelines in Guayaquil: The role of mediating factors

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Abstract*—Because the high infectious rates of Coronavirus in south countries, the compliance with prevention guidelines (WHO and Ecuadorian Emergency Committee (COE) prevention guidelines) is necessary to prevent the spread of the virus. People ignoring instructions likely exacerbating the social, economic, and environmental concerns about the pandemic. According to sociodemographic descriptors in urban and rural areas of Guayaquil, average falls to over 70% for people having only below upper secondary education and over 50% for employed people among 20-34 years old, in the middle of a popular economy weakened context. The risk perception (F2), safety climate (F3) and the perceived understanding (F4) are believed to directly influence the compliance (F1) within this context. The mediating role of perceived understanding and safety on compliance response is also considered. This study aimed to identify factors that make an Ecuadorian population more/less likely to comply infectious COE guidelines. The data was collected after the last COVID-19 lockdown in Guayaquil city via online survey of 927 participants. The SPSS®Amos 27.0 - SEM based on maximum likelihood estimation was implemented to evaluate all the considered hypotheses ($\chi 2$ /df=3.6, CFI $\geq$ 0.91, TLI $\geq$ 0.90, RMSEA $\leq$ 0.05). The analysis of this hypothesis suggests that positive change in compliance is possible mediating the effect of risk positively. The study leaded to factors affecting a fully restrictions compliance after the last regulation in Guayaquil City (April-May 2021): the self-awareness of following the rules seems to have a strong relationship with perception of having enough knowledge about the coronavirus to primarily leads the behavioral control. Low confidence about government management during crisis events is another factor that enhance non-preventive behavior. This combination seems to be enough to decide about the convenience of following health precautions, especially during period of relaxation.

***Keywords*—Covid-19, non-adherence, beha vio ral s cience, covariance modeling, perceived risk, perceived understanding, safety climate**

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I. Introduction

According to the World Health Organization [1], since the pandemic began, more than 107 million cases of coronavirus have been reported around the world, with more than 2.3 million deaths. The second virus outbreak has brought new SARS-CoV-2 variants and although many countries exhibit increasing numbers of new cases, those have been on a major decline since the middle of January 2021. This brings the global cumulative numbers to 108.2 million cases.

Due to the exponential growth of infections observed in many South American countries with similar social context [2], a high level of compliance with prevention guidelines, such as those issued by the World Health Organization and cantonal COEs in Ecuador, is necessary to control the COVID-19 cases [3], [4]. This is the main reason why there have been numerous research works focus on assessing the level of compliance with COVID-19 regulations [5], [6], [7], [8], [9], [10], [11], [12], [13], [4] which widely include environmental issues [14], [15], [16], [17]. People ignoring instructions likely aggravate the social, economic, and environmental concerns about the pandemic.

Before the last 'weekend' restrictions (April-May 2021), Guayaquil showed more than 370.000,00 cases with high posi- tive rate of infections, being *Vergeles, Samanes, socio vivienda, Guasmo Norte, Fertisa, Alborada y Urdesa* the most affected regions. According to descriptors in urban and rural areas of Guayaquil, the city with a population of approximately 2.6 million inhabitants have shown a 2.4% of annual growth rate, with 2.7% of population living in rural areas. 72,21% of residents over 20 years of age (1.425.247 inhabitants aprox.). Average falls to over 70% for people having only below upper secondary education and over 50% for employed people among 20-34 years old, in the middle of a popular economy weakened context. Studies also highlight the natural concern about what official statistics citizens collect and access and a general lac k of how the preventive Covid-19 guidelines are understood [18]. The context could explain how social groups practice forms of "isolation" along with "soc ial distancing" from a vertical/horizontal collectivism perspective [19].

Multiple cross-sectional studies assessing the effectiveness of people response to long-term regulations (e.g. social distancing, hygiene, and quarantine rules) provide limited insights of what predict compliance with the COVID-19 guidelines during the crisis or during periods of relaxation. Research suggests that those related with trust and confidence in in- situations, social experiences, mental health and well-being, perceived risk and knowledge of the virus are crucial to adapt pandemic strategies to bring people on board in this moment of crisis [20].

According to previous works, authors s uggest that adoption of Covid-19 preventive behaviors, in the context of affected regions in Guayaquil, could be associated with the level of panic emotion [4], [21], [22], the convenience of health precautions for avoiding COVID-19, and by the knowledge and attitudes toward infectious diseases [21].

This study aimed to identify factors that make an Ecuadorian population more/less likely to comply infectious waste guidelines through a mix of dimensions determining compliance with Covid-19. The compliance model comprising three key determinants suiting the social context complexity: perception risk (F2), safety climate (F3) and perceived understanding (F4).

More recently, other works have suggested that political beliefs and confidence in the system is a key determinant in the effectiveness of government instructions and could partially explain why citizens are less likely to follow rules during pandemic [23].

A. Modeling compliance in the sample context

Three explanatory variables are considered to assess the unintentional adherence model in Fig 1. All items are related with COE policies.

Perceived risk (F2) must be understood as the level of panic emotion affecting the ability to respond to a novel situation to mitigate potential crisis effects.

Safety climate (F3): Defined as a shared safety management practices among organizational members, this variable leads to trust and confidence in institutions during crisis to be the most prominent feature [24]. The background hypothesis was that a high rate of confidence people will adopt a safety behavior according to rules and it could also mediate the relations with the perceived risk.

Perceived understanding (F4): The direct effect of situational awareness and the associated control behavior on compliance has been settled previously [21]. It is also believed that panic emotion associated with perceived risk could be regulated by the implicit rationality behind the knowledge of epidemiological consequences [25].

The compliance of Covid-19 guidelines (F1): many predictors have attempted to explain the complexity of 'following rules'. In the context of this study, the 'cleaning' adherence implying interpersonal emotion regulation skills, behavioral emotion regulation skills, and conscientiousness [26], is defined in terms of qualitative aspects of COEs' collection and disposal of infectious waste policies [27].

The mediating role of F3 y F4 is believed to explain better how the preventive Covid-19 guidelines (F1) are understood. All latent constructs were measured by using a 5-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'.

Hypothesis 1 (H_{2-1}): A high level of panic emotion enhance the ability to respond to a novel situation to mitigate potential crisis effects.

Hypothesis 2 (H_{2-4-1}): adherence to preventive measures after a panic emotion, is more likely for inhabitants who better understand the benefits of adhering to Covid-19 rules.

Hypothesis 3 (H_{2-3-1}): adherence to preventive measures after a panic emotion, is more likely for inhabitants being confidence about government management during crisis.

Hypothesis 4 (H_{2-3}): A better safety climate mediate positively the perceived panic emotion to better comply a safety behavior.

Hypothesis 5 (H_{2-4}): A rational knowledge and behavioral control mediate positively the perceived panic emotion to better comply a safety behavior

II. MATERIALS AND METHODS

A. Population and sample

According to estimations of Statistics National Institute (INEC). Ecuador has 17.510.643 million inhabitants approximately. Guayaquil is the largest city in Ecuador, with a population of about 2.6 million inhabitants [28]. Young people make up a large segment of the population (up to 1.4 million) and *d*uring the last outbreak, those ages from 20 years old has showed the higher infection rate COVID-19 epidemics [29].

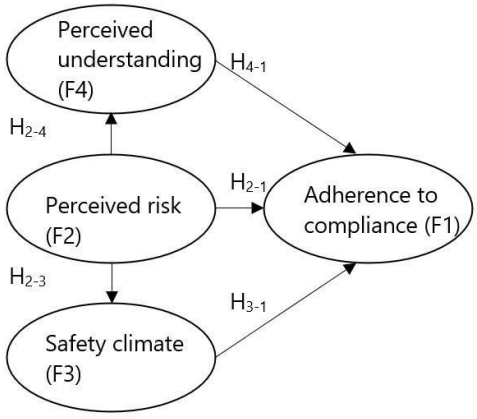

Fig. 1. Conceptual framework - SEM model

A simple random sample of 927 participants living in affected regions were considered for the study. More precisely, 51.13% female, 47.78% male and 1.07% non-binary and 70.76% of them were aged between 20 and 28 years old. 48% have completed the higher secondary

education and 29% have completed only 3 years of college. The household income is range less than 400 USD and most of them have no social security.

B. Survey instrument

An online questionnaire was distributed from June 24 to July 4, 2021, after the last mobility restrictions (April-May 2021) in Guayaquil City. The instrument contained 39 items to support the descriptive and inferential analysis.

Initial questionnaire includes 6 items-demographic predictors related with gender, age, educational level, social security, and monthly salary. The remaining sections contain 33 items as follows: perceiving understanding (4 items) and perceived behavioral control (4 items), perceived risk (7 items), climate safety (6 items) and adherence to guidelines (12 items). Items were measured by using 5-point Likert scale with categories ranging from 1="strongly disagree" to 5="strongly agree" based on items worded positively, so the higher score represents a strong adherence with rules.

Original statements to measure latent and observed variables of the main hypothesis were gathered based on the review of available literature (Appendix A).

C. Data analysis

To investigate the factors affecting the adherence to Covid restrictions, a structural equation model (SEM) [36] based on maximum likelihood estimation was conducted to examine all the considered research hypotheses, following previous contributions [19], [20], [23]. The internal consistency of the instrument items, assessed by Cronbach's alpha was high (> 0.88), and all variables were normally distributed. However, an exploratory factor analysis (EFA) based on Vari- max with Kaiser normalization matrix (Keiser-Meyer-Olkin (KMO) adequacy equals to 0.89), was carried out to confirm the internal reliability of the hypothesis observed in Fig. 1. The original model considered the perceived behavioral Control and understanding separately, with a moderate internal consistency reliability within behavioral statements. The exploratory factorial analysis showed that both explain better the exogenous latent variable F1. The content includes the strong relationship with individual's attitude towards the ongoing global outbreak within the last 4 items ($\alpha > 0.78$).

After a confirmatory factor analysis (CFA), authors considered that correlating errors according to Bollen and Lennox criteria [30], based on inner relationships suggested by the COEs' disposal of infectious waste policies [27], was acceptable and indeed to fit the model ($\chi 2/df=3.6$, p-value$\leq$0.05, CFI $\geq$ 0.91, TLI $\geq$ 0.90, RMSEA $\leq$ 0.05).

Fig. 2. Standardized regression weights and errors of the structural equation model (SEM)

III. Results and Discussion

The structural model was studied to quantify the parameters of the hypothesized relationships among latent variables, interpreted as standardized regression coefficients, by using IBM SPSS and AMOS 27.0. The type of mediation was also confirmed based on the direct and indirect effects reported. Educational level was not included because the poor correlation displayed in EFA.

The CFA calculated correlations among variables are shown in Table I. The Fig. 2 highlights significant positive correlations among variables, except perceived risk and adherence that contrary to the findings have non-significant path coefficient. Perceived behavioral control and understanding, and climate safety are significant predictors of adherence in terms to COEs' disposal of infectious waste policies.

TABLE I
DESCRIPTIVE STATISTICS AND INTER-CORRELATIONS AMONG VARIABLES

	CR	M	SD	F4	F3	F2
(F4)	0,864	4.035	0.654			
(F3)	0,818	3.434	0.712			
(F2)	0,809	3.86	0.704	0.686***	0.398***	
(F1)	0,808	4.072	0.699	0.183**	0.177***	-0.054 (NS)
*p< 0.05, **p< 0.01, ***p< 0.001						

The final structural equation explains 46.62% of the variance in adherence to rules after a Varimax rotated principal component analysis of the factor axes. Next, the hypothesis H_{2-1} is one that does not seem to be discriminatory on F1.

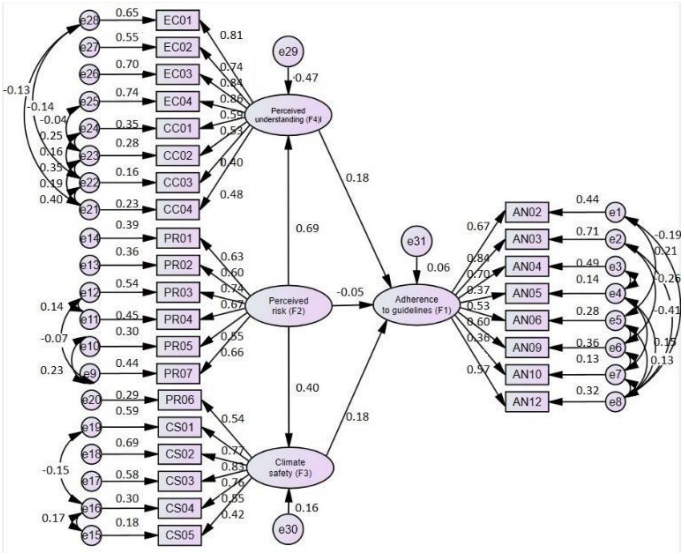

Fig. 2. Standardized regression weights and errors of the structural equation model (SEM)

According to the findings, the mediating role of F3 y F4 is believed to explain better how the preventive Covid-19 guidelines (F1) are understood, leading to the acceptance of hypothesis H_{2-3-1} and H_{2-4-1}. This finding is supported by previous work [9]. Direct hypotheses H_{4-1} and H_{3-1} were also significant. The indirect effect in the path analysis is shown in Table II.

A possible explanation for this can be found analyzing Fig. 2. Observed variables of F2 are better weighted than those defining adherence. 75% of participants had neutral opinion about AN02, AN05, AN06 and AN10, showing a low regression weight, becoming in factors leading the path for the analysis. All of them are significant predictors of F1.

One of the basic preventive actions to reduce Covid-19 infection is frequently "wash hand via soap and water, especially after toilet and before taking meal" (AN02). As expected, 90.29% of the sample accomplish this task (46.95% males, 51.85% females and 1.19% binary).

Only 56.09% of the sample (42.96% males, 55.87% females and 1.15% binary) usually avoid going out for non-essential reasons. Social distancing is a well-recognized factor affecting positively the pandemic slowdown [31] so, it would be expected that AN05 match better to adherence (F1).

Only 56.09% of the sample (42.96% males, 55.87% females and 1.15% binary) usually avoid going out for non-essential reasons. Social distancing is a well-recognized factor affecting positively the pandemic slowdown [31] so, it would be expected that AN05 match better to adherence (F1). Another key variable to ensure social distancing AN06 ("Wear of mask while going outside"), is showing a low regression weight, but 93.86% individuals reported to wear mask usually (52.18% female, 46.89% males and 0.93% binary). 69.88% belonged to the age group of 20-28, and 48.95% of this group completed high school.

Regarding the item AN10 ("Dispose used mask, hand gloves and tissue with other household wastes"), The 47.15% of the sample do not accomplish the usage and safe disposal of safety equipment (51.14% and 48.86% of the respondents were females and males respectively).

Young adults [20-58 years] were identified with low compliance rates (only 48.75% completed high school). 43% never accomplish AN02 rule, 19% are mostly neutral with AN05, 59% are not willing to wear mask (AN06), meanwhile 35% of this group rarely remove waste in accordance with COEs' disposal of infectious waste policies. As compliance with rules increases, the effect of age and higher incomes become evident. During the last 'weekend' restrictions in Ecuador, the infectious rate increased in those aged 20 and 49 years. [29]

TABLE II
INDIRECT EFFECTS IN PATH ANALYSIS

Indirect path	Estimation
Perceived risk-perceived understanding-adherence to rules	0.124**
Perceived risk-climate safety-adherence to rules	0.072***

F1 seems to be equally correlated by F2 and F3. However, perceived risk mediated by perceived understanding (R2=0.47) significantly predict adherence (R2=0.06) better than the climate safety (R2=0.16). However, political factors and climate safety have been associated with AN behavior during COVID-19 events [32].

According to Table III, the tendency to follow safety recommendations is better correlated by the perceptions concerning political actions (PR05) and available information (PR07), especially AN05, AN06 y AN10. A group of 43.90% fail in AN05-" to go outside for work or to collect necessary belongings". 46.19% of this group showed low interest in the pandemic policies implemented by the government (PR05) and 24.67% fail in PR07-"I am interested in the pandemic information released to the public". By the other hand, 47.57% infringe AN10-"Dispose infectious wastes with other household wastes" and it could be associated with a 46.48% of low interest in the pandemic policies implemented by the government (PR05) and by a lack of information (PR07) with 26.30%. This could be summarized as a possible auto perception of susceptibility to COVID-19 and trust in government [23], [33].

Observed variables regarding the perceived behavioral component are less related to F4. 83.81% were agreed or totally agree with the statement CC01 ("The preventive protocols are completely up to me), most of participants to respond were females (52.25%). Meanwhile, 68.60% of the sample think that CC02-"preventive protocols are easy to be implemented" (52.20% females, 47.32 males, 0,47% binary). 61.70% of the sample trust to avoid infection (52.62% females, 46.67% males and 0.69% binary). Next, 62.99% of the sample are agreed or totally agree with the last statement (CC04)-"I am confident that I have enough knowledge about COVID -19". Again, females (52.05%) is the predominant gender perceiving that the Covid-19 prevention rules are enough. By the other hand, the descriptive statistics of EC descriptors in F4 were: 88.24% do understand the transmission of coronavirus (52.32% females, 46.94% males, 0.73% binary), more than 70% do understand the incubation period and symptoms, and they are aware about how to proceed when they notice symptoms (58.45% females, 50.34% males).

According to Pearson correlation coefficients (Table IV) between perceived behavioral and understanding (F4), and adherence (F1), AN02-"frequently wash hand via soap and water, especially after toilet and before taking meal" is significantly correlated by the perception that preventive protocols are completely up to each participant (CC01). The relationship with EC01-"I do understand the transmission of COVID-19", and EC04-"I do understand the protocol if I have symptoms that might lead to COVID-19" are also important. In this context, a reasonable sense of self-social responsibility remains significant. AN05-"usually avoid going out for work or to collect necessary belongings" is strongly dependent of the categorical variables CC04-"I have enough knowledge about COVID -19", EC02-"I do understand the incubation period of COVID -19", and CC03-"I can prevent getting infected by COVID -19". As mentioned before, it is expected that AN05 match better to adherence

(F1), but more than 60% of the respondents feel confident about not getting the infection (an intentional nonadherence of this rule), because the perception that they have enough information to hold the spread.

AN06-"Wear of mask while going outside" is strongly attached to all understanding covid-19 descriptors. Regarding infectious waste disposal, AN10 is significantly weighted via direct effect by CC03, CC04, EC02 and EC04. Again, the perception of having enough knowledge about the coronavirus primarily leads the behavioral control. Some authors have stated that perceived severity and vulnerability as well as the public's assessment of the disease's danger is influenced by their understanding of a specific health hazard $. At this point, the possible non-adherence to AN06 could be unintentional and unlikely to happen.

The climate safety (F3) mediates the influence of the perception risk on adherence. Table V shows the correlation coefficients between F3 and AN.

Even when F4 mediates AN stronger than F4, relations with perception of safety and trust in political actions to promoting protective measures should be evaluated. F3-"climate safety" became significant to define AN02-"Frequently wash hand". At this point, the possible non-adherence to AN02 could be unintentional and unlikely to happen.

TABLE III
PEARSON CORRELATION COEFFICIENTS. PERCEIVED RISK (F2) VS. ADHERENCE TO RULES (F1)

	(PR01)	(PR02)	(PR03)	(PR04)	(PR05)	(PR07)
Frequently wash hand (AN02)	0.061	0.007	0.035	0.015	0.061	0.107**
Avoid going out for work (AN05)	0.043	0.054	0.047	0.118**	0.131**	0.095**
Wear of mask while going outside (AN06)	0.100**	0.080*	0.142**	0.117**	0.070*	0.153**
Dispose infectious wastes with other household wastes (AN10)	0.088**	0.045	0.049	0.069*	0.138**	0.115**
*p< 0.05, **p< 0.01, ***p< 0.001						

TABLE IV
PEARSON CORRELATION COEFFICIENTS. PERCEIVED UNDERSTANDING (F4) VS. ADHERENCE TO RULES (F1)

	(CC01)	(EC02)	(CC03)	(CC04)	(EC01)	(EC02)	(EC03)	(EC04)
Frequently wash hand (AN02)	0.097**	0.071*	0.073*	0.085*	0.097**	0.11**	0.081*	0.133**
Avoid going out for work (AN05)	0.023	0.058	0.086**	0.132**	0.072*	0.129**	0.023	0.106**
Wear of mask while going outside (AN06)	0.178**	0.071*	0.042	0.01	0.231**	0.099**	0.128**	0.200**
Dispose infectious wastes with other household wastes (AN10)	0.04	0.079*	0.089**	0.165**	0.033	0.116**	0.050	0.090**
*p< 0.05, **p< 0.01, ***p< 0.001								

TABLE V
PEARSON CORRELATION COEFFICIENTS. CLIMATE SAFETY (F3) VS. ADHERENCE TO RULES (F1)

	(CS01)	(CS02)	(CS03)	(CS04)	(CS05)	(PR06)
Frequently wash hand (AN02)	0.137**	0.131**	0.090**	-0.012	0.075*	0.089**
Avoid going out for work (AN05)	0.092**	0.075*	0.073*	0.02	0.008	0.006
Wear of mask while going outside (AN06)	0.123**	0.028	0.106*	-0.109**	0.049	0.071*
Dispose infectious wastes with other household wastes (AN10)	0.122**	0.084*	0.087**	0.125**	0.146**	0.117**
*p< 0.05, **p< 0.01, ***p< 0.001						

AN05, AN06 y AN10 show significant correlations specially with CS01. CS03 and PR06 also influence the convenience of health precautions. Notice that AN10-"infectious waste disposal" is positively well correlated by F3, but 47.15% of the sample (mostly aged 20-28 years) do not accomplish the usage and safe disposal of safety equipment. Besides, keeping social distance (AN05) became in a convenience matter since respondents recognized political actions but the tendency to political trust and the self-awareness of following the rules remains diffuse. This could evidence an intentional non-adherence to rules.

IV. CONCLUSIONS

Last COVID-19 lock-down in Guayaquil city happened one year after the coronavirus pandemic began, preceded by a period of relaxation, or overlapping both periods. New insights come out to understand the interplay of demographic, housing, health, political, psychological, and social factors to determine the people response to last Covid-19 restriction rules, especially during periods of relaxation when the non-adherence behavior become more evident depending on its nature and type. This study aims to address factors that could explain why a significant group of people showed low adherence to well-known precautions rules. According to the specific social context, we decided to use a structural equation model (SEM) to predict the influence of

3 independent latent variables (F2, F3 and F4) on the adherence (F1) as a dependent variable preceded by a period of relaxation or overlapping periods of crisis. The model was significant enough to identify factors that embrace nonprotective behavior. Contrary to previous findings, non-significant direct effect of F2-"perceived risk" on comply F1-"adherence" was found. So, null hypothesis 1 (H2−1) should be accepted. However, the mediation of risk via F3-"perceived understanding" and F4-"safety climate" were significant to predict the response to mitigate potential crisis effects.

Young people aged 20-28 with lower incomes and living in moderate urban areas of Guayaquil were representative in the study. The tendency to adhering Covid-19 prevention rules or not is roughly homogeneous among genders. However, women were more likely than men to adopt an intentional nonadherence of rules, with a moderate/low feeling responsible for both themselves and others, which match previous results. Women were also more likely to embrace safety behaviors. No educational differences were found in the adoption of protective behaviors. Most of the sample have completed the higher secondary. However, this group possess better knowledge and attitudes towards the disease and towards preventive measures, almost the same proportion for those who do not comply the same rules. According to the model, the tendency to follow safety recommendations is better correlated by the perceptions concerning political actions and available information. In previous works, intentional non-adherence was statistically associated with certain lack of trust in Government, support from friends, reduced perception of risk and lack of knowledge about rules, which seems to be coincident with our results.

Another important observation is related with indirect effect paths. The concept of horizontal collectivism characterized by interdependency, low freedom same as others and high equality predicted stronger compliance with social distance norms indirectly. In this study, collective outcomes were considered more favorable than individuals in the same risk category. The effect of this variable should be addressed in 6 future works.

By the other hand, the transmission behavior of SARS-CoV2 is creating significant challenges for services related to solid waste (SW) and wastewater (WW) management all over the world, especially in developing countries, and a new environmental concern variable, in terms of qualitative/quantitative aspects of collection and disposal of infectious waste, have been considered to match better the COE recommendations. Again, significant group (mostly young people) of the sample is interested in political actions but the tendency to political trust and the self-awareness of following the rules remains diffuse. This could evidence an intentional non-adherence to rules.

In summary, the self-awareness of following the rules seems to have a strong relationship with perception of having enough knowledge about the coronavirus, that primarily leads the behavioral control. Low confidence about government management during crisis events is another factor that enhance non-preventive behavior. This combination seems to be enough to decide about the convenience of following health precautions, especially during period of relaxation.

The findings suggest that promoting strategies based on horizontal collectivism criteria may increase the trust in government and manage the self-perceived knowledge to continue practicing precautionary controls that match the self-perceived risk of contracting Covid-19 with adherence again.

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APPENDIX A. THE CONSTRUCTS AND STATEMENTS

Adherence to compliance [34]

Potable water is available for daily needs and personal hygiene (AN1)
Frequently wash hand via soap and water, especially after toilet and before taking meal (AN2)
Clean rooms, house, and toilets by antiseptic or disinfectant solutions properly (AN3)
Wash clothes, shoes, and others wear after coming back from outside (AN4)
Need to go outside for work or to collect necessary belongings (AN5)
Wear of mask while going outside (AN6)
***Wear of hand gloves while going outside (AN7)
***Wash and sundry re-usable mask and hand glovesbefore re-use (AN8)
Properly dispose of used mask, hand gloves and tissue in separate covered bins or bags (AN9)
Dispose used mask, hand gloves and tissue with other household wastes (AN10)
***Used mask, hand gloves, and tissues are burn properly (AN11).
Dispose of all types of waste together in a specific / community waste disposal point (AN12)

Perceived risk (F2) [9]

My health is at risk during the Covid-19 pandemic (PR01).
The Covid-19 pandemic is difficult to control (PR02).
The coronavirus can cause serious harm to my body once infected (PR03).
I think the situation of the Covid-19 pandemic is more serious than previous ones (PR04).
I am interested in the pandemic policies implemented by the

government (PR05).
*I trust that the government recommends the appropriate measures to control the Covid-19 outbreak (PR06)
I am interested in the pandemic information released to the public (PR07).

Climate safety (F3) [9]

The government is concerned about the health of people (CS01).
I trust the Covid-19 information provided by the government (CS02).
Ther is a stated set of goals for Covid-19 prevention (CS03).
People consciously follow the pandemic prevention regulations (CS04).
Being able to provide necessary personal protective equipment for inhabitants during the pandemic (CS05).
***Offering to inhabitants as much safety instructions and training as needed during the pandemic (CS06).

****Perceived understanding (F4) [35]***

The preventive protocols are completely up to me (CC01).
I think preventive protocols are easy to be implemented (CC02).
There is a stated set of goals for Covid-19 prevention (CS03). I am confident that I have enough knowledge about COVID -19 (CC04)
I do understand the transmission of COVID-19 (EC01)
I do understand the incubation period of COVID -19 (EC02)
I do understand the symptoms of COVID -19 (EC03)
I do understand the protocol if I have symptoms that might lead to COVID-19 (EC04)
***I do understand which hospital can treat COVID -19 patient (EC05)

After an exploratory factor analysis (EFA):
(*) Loading factor matched better F4 than F2.
(**) Loading factors in Perceived Behavioral Control and Understanding of COVID-19 correlated a unique matrix F4.
(***) Item removed from the initial questionnaire.

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