ORIGINAL RESEARCH

Political Psychological and Sociocultural Determinants of Compliance with COVID-19 Emergency Measures Among Waste Pickers in an Iranian Sub-urban Slum Community

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Abstract

In the context of the coronavirus disease 2019 (COVID-19) pandemic, compliance with government regulations is a tremendous challenge in the effort to curb the viral transmission. The fact that specific communities and people across the world continue to ignore government regulations of COVID-19 is a crucial issue to address. Researchers sought to examine the political psychological and sociocultural determinants of adherence to COVID-19-related law and policy measures among waste pickers in a sub-urban slum community in Iran. A cross-sectional survey of 362 waste pickers from two municipalities in the countryside of Tehran, Iran, was conducted between January and May 2022. Multiple regression analysis was used to predict the significant difference between the direct or indirect effects of political psychological and sociocultural variables on compliance with COVID-19 emergency measures. Confidence intervals were estimated using the bootstrap method. The findings supported the proposed model. The results indicated that political ideology ($\beta = -0.13$, 95% CI -0.29 to 0.02), individualism worldview ($\beta = -0.14$, 95% CI -0.32 to 0.07), fatalism ($\beta = -0.18$, 95% CI -0.40 to 0.04), health literacy ($\beta = 0.16$, 95%CI -0.05 to 0.37) and prosociality ($\beta = 0.09$, 95%CI 0.03–0.13) exert an indirect effect on compliance with the COVID-19 emergency measures through both trust in government and trust in science and scientific community. This study has implications for authorities in ensuring adherence to governmental orders for COVID-19 outbreak. A democracy-based and human rights-based approach and a flexible framework for proceeding more equitable COVID-19 legal and government regulations is critical to an effective and acceptable health response to COVID-19. Instituting slum emergency planning committees, incorporating the informal providers into all pandemic response plans in every urban informal settlement and providing an immediate guarantee of payments to waste packers will be indispensable.

Keyword Compliance · COVID-19 emergency measures · Iran · Slum · Waste pickers

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Introduction

Two years on from the emergence of coronavirus disease 2019 (COVID-19), which represents the most significant global disruption in recent history, in Wuhan, China, in late 2019, there have been more than 280 million confirmed infected cases of COVID-19 and almost 5.5 million associated deaths worldwide (Johns Hopkins University, 2022). To control the spread of the virus, the World Health Organization (WHO) has recommended several public health and social measures (PHSMs) (World Health Organization, 2021). Nearly every government in the world adopted these extraordinary legal and government regulations to contain the spread of COVID-19. The norms for COVID-19 emergency measures are well-established through legal instruments. International human rights law authorizes governments to temporarily defer democratic actions and rights (Edgell et al., 2021).

Research on the efficacy of guidelines for COVID-19 has demonstrated that regulatory compliance decelerates the spread of the virus (Chu et al., 2020). Given the importance of compliance with government regulations of COVID-19, the fact that specific communities and people across the world continue to ignore them is a crucial issue to address. Urban informal settlements also known as slums are prevalent in the majority of cities in developing countries and approximately one billion people, or one-eighth of the population, in the world live in them (United Nations, 2020). The United Nations Human Settlements Programme (UN-Habitat) defines a slum as an urban area with limited access to safe water, inadequate access to sanitation, insufficient living space, poor structural quality of housing and insecure tenure (United Nations Human Settlements Programme, 2003). Historically, slum communities have been linked to pandemics (Ambrus et al., 2020). This trend has been observed in the contemporary historical period (Deb & Rao, 2020). Waste pickers make up the lion's share of the slum population. Waste pickers who dwell in the slums are a part of the vulnerable class of society and the nature of their working make them vulnerable to come in contact of COVID-19 infected people (Haque et al., 2022). Waste pickers work instantly and directly with recyclable materials and conduct routinely this work without masks or gloves (Raghunandan, 2021). In Iran, the government has implemented a range of stringent policies to tackle the COVID-19 and applied lockdown measures to prevent transmission of the virus. Iran's National Headquarters for Management and Control of the Coronavirus (INHMC) and health authorities have made recommendations concerning COVID-19 mitigation measures for waste pickers (Daryabeigi Zand & Vaezi Heir, 2021).

Several recent studies have examined various factors, categorized as socio-demographic, sociocultural, psychosocial, and social-cognitive, contributing to compliance with the COVID-19 emergency measures (Wright et al., 2021; Kabamba Nzaji et al., 2020). In this work, we develop a theoretical model to examine the determinants of adherence to the COVID-19 emergency measures. The model consists of several variables (political ideology, individualism worldview, fatalism, health literacy, prosociality, trust in government, trust in science

and scientific community and compliance with COVID-19 emergency measures). We underpin this model with literature on all relevant political psychological and sociocultural factors relating to compliance or non-compliance with each the emergency measure of COVID-19 (Choma et al., 2021; Lu et al., 2021; Jimenez et al., 2020; Gautam et al., 2021; Campos-Mercade et al., 2021; Sailer et al., 2021; Jordan et al., 2021). In this model, political psychological and sociocultural predictors may have positive or negative effects on adherence to these emergency measures. The possible determinants of compliance or non-compliance with the COVID-19 emergency measures are trust in government as well as trust in science and scientific community. More precisely, we predict that those who overall have less trust in government, science and scientific community are less likely to adhere to COVID-19 emergency measures. Moreover, previous studies have underscored various correlates of trust in government and trust in science and scientific community that, directly or indirectly, predict adherence to the COVID-19 emergency measures. Some of the key predictors among these are political ideology (Becher et al., 2021), individualism worldview (Chen et al., 2021), fatalism (Valenti & Faraci, 2021), health literacy (Do et al., 2020) and prosociality (Han et al., 2021). Figure 1 illustrates a representation of the relationships between political psychological and sociocultural factors at the meso level and compliance with COVID-19 emergency measures at the micro level.

The unprecedented impact of COVID-19 pandemic on democracy and human rights emphasizes that health is interwoven with democracy and human rights (Forman & Kohler, 2020). This indivisibility is evident in how political psychological and sociocultural factors are establishing to be critical determinants of the enforcement of COVID-19-related policies and strategies on slum communities. Given the nature of waste picking, few studies have been conducted during COVID-19 pandemic. Understanding and identifying the factors that enhance or impede adherence to governmental orders seem crucial to avoid the worrying new variants of the virus and the new waves of infection. The present study investigates the political
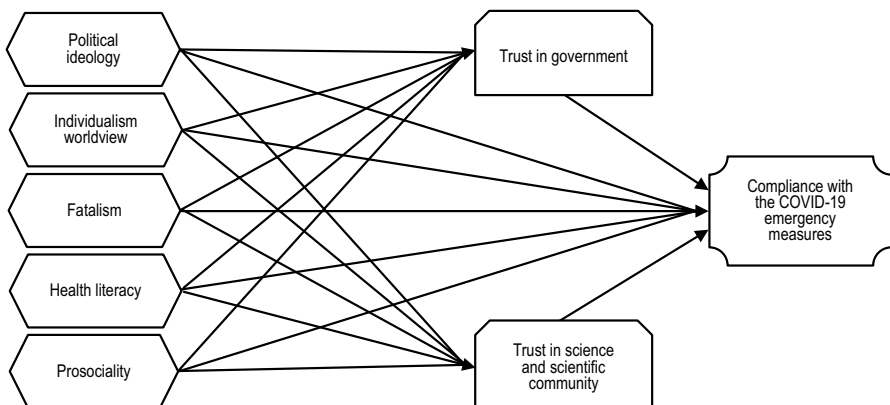

Fig. 1 Theoretical model of the political psychological and sociocultural determinants of compliance with COVID-19 emergency measures

psychological and sociocultural determinants of adherence or non-adherence to COVID-19-related law and policy measures among waste pickers living in an Iranian sub-urban slum community.

Methods

Study Design, Setting and Sample

This was a descriptive and cross-sectional survey conducted among waste pickers aged eighteen years and older in two municipalities in the countryside of Tehran, Iran. One of the survey sites was located in the west of Tehran and had about 2500 waste pickers and the second was located in the south of Tehran and had about 3500 waste pickers. Many waste pickers stayed in slum communities living on the edge of the dumping sites and formed mainly in private lands close to the final disposal sites. Four out of those surrounding slums were selected, using probability proportional to size (PPS) sampling. To ensure the representation of the slums, they were divided into several clusters, identified on the basis of natural divisions, having a household (HH) size which ranges from 100 to 150 HHs. On the order of 10 percent of the total clusters were selected through the PPS sampling procedure. Subsequently, the required number of waste picker households was selected via random sampling. The sample size was calculated based on OpenEpi (Dean et al., 2022) at the 95% confidence level, requiring 362 participants. Within four months, between 3 January and 29 May 2022, the survey was terminated. We received ethical approval to conduct this study from the Ethics and Research Committee of the Shahid Beheshti University of Medical Science.

Variables and Instruments

Political ideology was measured using the conservatism subscale of the Authoritarianism, Conservatism, and Traditionalism (ACT) scale (Duckitt et al., 2010). Participants responded to twelve items on a typically Likert scale with a seven-point response format, a continuum from 1-completely disagree (1 = very left/liberal) to 7-completely agree (7 = very right/conservative).

Individualism worldview was assessed by the short-form version of the individualism-communitarianism subscale of the Cultural Cognition scale (Kahan, 2012). Individualism–communitarianism contains six agree-disagree items with a four-point Likert-type response format. Higher scores were associated with a lower communitarianism and a higher Individualism.

Fatalism was measured via the Fatalism scale (Shen et al., 2009) which consists of 20 items distributed across three dimensions: predetermination (10 items), luck (4 items) and pessimism (6 items). Participants were asked about their disagreement or agreement with each item. Responses were indicated on a typically Likert scale with a five-point response format.

Health literacy was measured with the Short-Form Health Literacy Scale (HLS-SF12) (Duong et al., 2019). Participants were asked to respond twelve items and to rate the perceived difficulty for each of the tasks related to health on a typically Likert scale with a four-point response format (in the range 1-very difficult to 4-very easy).

Prosociality was assessed using the instrument of Adults Prosocialness (Caprara et al., 2005). There are sixteen items in the tool under two subdomains: prosocial actions (twelve items) and prosocial feelings (four items). Participants rated their tendencies to enact sharing, helping, and caring actions, as well as feeling emphatic with others and their needs, on a typically Likert scale with a five-point response format (from never true to always true).

Trust in government was measured by the Citizen Trust in Government Organizations (CTGO) scale (Grimmelikhuijsen & Knies, 2017). The scale originally consists of nine items distributed across three dimensions: benevolence (three items), competence (three items), and integrity (three items). The content of several items was slightly modified. All agree-disagree items were answered on a typically Likert scale with a five-point response format.

Trust in science and scientific community was assessed via the instrument of Trust in Science and Scientist Inventory (Nadelson et al., 2014). The content of several items was reasonably modified. Participants answered to twenty-one agree-disagree items with a five-point Likert-type response format. The adjusted version contained sixteen items.

Compliance with the COVID-19 emergency measures was assessed by the Compliance with COVID-19 Prevention Guidelines scale (Plohl & Musil, 2021). This scale consists of eleven protective measures (e.g. the prolonged hand-washing or the limited hand-to-face). Participants were asked to what extent they adhere to COVID-19 prevention guidelines. Respondents indicated the level of their compliance or non-compliance with each COVID-19 emergency measure on a typically Likert scale with a four-point response format (in the range 1=to any extent to 4=to a great extent).

Statistical Analysis

Data were analyzed through the IBM SPSS version 26.0 software to explore distributions (frequencies and percentages) of socio-demographic variables, calculate correlation coefficients between the variables, and perform multivariate regression analysis, and Mplus 8.4 to estimate the direct and indirect effects on a dependent variable and evaluate the hypothetical model using structural equation modeling (SEM). We used, initially, a confirmatory factor analysis (CFA) to verify the suggested model and the structural relationship between variables and, in the next instance, a Chi-square goodness of fit test, a Adjusted Goodness-of-Fit index in the range 0–1.00 (ANFI≥0.90 suggested as good), a Goodness of Fit in the range 0–1.00 (GFI≥0.90 recommended as good), a Comparative Fit Index which ranges from 0 to 1.00 (CFI≥0.90 recommended as good), a Tucker-Lewis index in the range 0–1.00 (TLI≥0.90 recommended as good), a Root Mean Square Error of

Approximation in the range 0–1.00 (RMSEA ≤ 0.08 suggested as good) and, ultimately, a Standardized Root Mean Residual in range 0–1.00 (SRMR ≤ 0.08 recommended as good) to assess model fit. We conducted multiple regression analysis to predict the significant difference between the direct or indirect effects of psychological and sociocultural variables on compliance with the COVID-19 emergency measures. Regression coefficients were calculated for each of the relationships between variables. Confidence intervals were estimated using the bootstrap method to determine regression coefficients' significance. The significance level was set to 0.05.

Results

In total, most of the respondents were between 34 and 49 years old (36.3%), followed by 34.7% between 18 and 33 years old. Male participants accounted for 92.7% of the sample, with females making up 7.3%. Slightly more than two-thirds of the respondents were married (66.1%) and Illiterate (65.3%). About 61.1% of respondents' monthly household income was low. More than half of the respondents were Iranian (51.5%). The majority of the participants were Shia (65.6%) and the remainder (34.4%) Sunni. A large proportion of the participants lived in a temporary shelter (71.1%). Nearly half of respondents (48.5%) used personal protective equipment (PPE) during work (Table 1).

In the model, the average variance extraction (AVE) was found to have value above 0.50 (0.58–0.75) in all variables under study. Moreover, the construct reliability (CR) was shown to be 0.70 or higher (0.74–90) in all variables. We included political ideology, individualism worldview, fatalism, health literacy, prosociality, trust in government, trust in science and scientific community and compliance with COVID-19 emergency measures into the SEM. The path analysis tested the relationships between baseline model variables. As seen in Fig. 2, significant relationships were found between political ideology, individualism worldview, fatalism, health literacy, prosociality, trust in government, trust in science and scientific community and compliance with COVID-19 emergency measures.

The overall fit information for the model was $\chi2 = 534.356$ (p-value < 0.05), RMSEA ≤ 0.07, SRMR ≤ 0.06, ANFI ≥ 0.92, CFI ≥ 0.91, GFI ≥ 0.91, TLI ≥ 0.90. Fit indices showed that the hypothesized model was acceptable for all latent variables. This allowed us to calculate correlations between model variables. The results indicated that trust in government ($M = 2.15$, $SD = 1.12$) was significantly and negatively correlated with political conservatism (r = −0.25, p-value < 0.05), individualism (r = −0.19, p-value < 0.05) and fatalism (r = −0.19, p-value < 0.05) and, in a statistically significant and positive way, correlated with health literacy (r = 0.18, p-value < 0.05) and prosociality (r = 0.16, p-value < 0.05). Similar patterns were found in the trust in science and scientific community ($M = 1.68$, $SD = 0.72$). Trust in science and scientific community was significantly and negatively correlated with political conservatism (r = −0.17, p-value < 0.05), individualism (r = −0.22, p-value < 0.05) and fatalism (r = −0.28, p-value < 0.01) and, in a statistically significant and positive way, correlated with health literacy (r = 0.31, p-value < 0.01) and prosociality (r = 0.19, p-value < 0.05). Further, compliance with COVID-19

Table 1 Demographic characteristics of the sample

Characteristics	N	%
Age, years		
18–33	91	34.7
34–49	95	36.3
50–65	52	19.8
≥ 66	24	9.2
Sex		
Male	243	92.7
Female	19	7.3
Marital status		
Single	48	18.3
Married	173	66.1
Never married	4	1.5
Divorced	29	11.0
Wife died	8	3.1
Education		
Illiterate	171	65.3
Primary	43	16.4
Junior secondary	32	12.2
Senior secondary or above	16	6.1
Monthly household income		
High	30	11.5
Middle	72	27.4
Low	160	61.1
Nationality		
Iranian	135	51.5
Non-Iranian	127	48.5
Religion		
Shia	172	65.6
Sunni	90	34.4
Residence		
Own home	20	7.6
Rented	56	21.3
Temporary shelter	186	70.1
Personal protective equipment (PPE)		
Yes	128	48.5
No	134	51.5

emergency measures ($M = 1.26$, $SD = 0.86$) was significantly and positively correlated with trust in government ($r = 0.24$, p-value < 0.05) and trust in science and scientific community ($r = 0.33$, p-value < 0.01) (Table 2).

The results of the regression analysis suggested that, in the first stage, political conservatism ($\beta = -0.12$, p-value < 0.05), individualism ($\beta = -0.10$, p-value < 0.05)
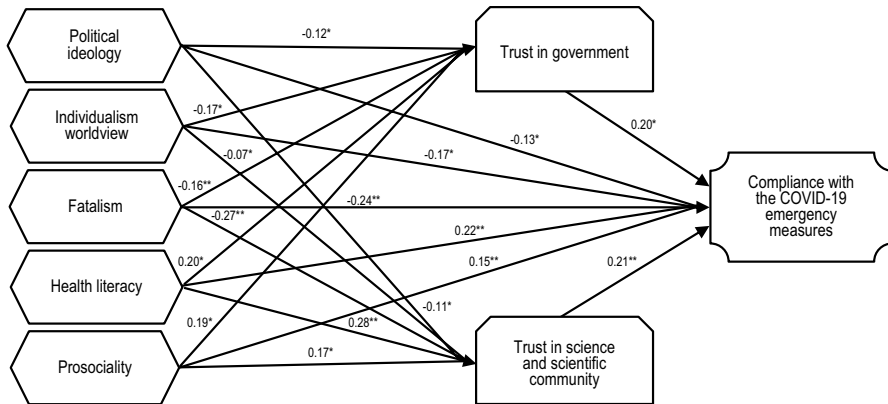
Fig. 2 Path analysis of the political psychological and sociocultural determinants of compliance with COVID-19 emergency measures (*p*-value < 0.05, **p*-value < 0.01)

and fatalism (β = −0.16, *p*-value < 0.01) were negatively associated with the trust in government, while health literacy (β = 0.20, *p*-value < 0.05) and prosociality (β = 0.19, *p*-value < 0.05) were positively associated with the trust in government. Specifically, political ideology, individualism worldview, fatalism, health literacy and prosociality were all significant predictors of trust in government. In the next stage, health literacy (β = 0.28, *p*-value < 0.01) and prosociality (β = 0.17, *p*-value < 0.05), but not political conservatism (β = −0.11, *p*-value < 0.01), individualism (β = −0.07, *p*-value < 0.05) and fatalism (β = −0.27, *p*-value < 0.01), positively and significantly predicted trust in science and scientific community. In third stage, political conservatism (β = −0.13, *p*-value < 0.05), individualism (β = −0.17, *p*-value < 0.05) and fatalism (β = −0.24, *p*-value < 0.01) were, in a negative and significant way, associated with the compliance with the COVID-19 emergency measures, while health literacy (β = 0.22, *p*-value < 0.01) and prosociality (β = 0.15, *p*-value < 0.01) were positively and significantly associated with the compliance with COVID-19 emergency measures. Also, trust in government (β = 0.20, *p*-value < 0.05) and trust in science and scientific community (β = 0.21, *p*-value < 0.01) were, in a positive and significant way, associated with the compliance with COVID-19 emergency measures. Political ideology, individualism worldview, fatalism, health literacy and prosociality explained 24% of the variance of trust in government and 15% of the variance of trust in science and scientific community. Finally, political ideology, individualism worldview, fatalism, health literacy, prosociality, trust in government and also trust in science and scientific community contributed to explaining 48% of the variance of waste pickers' compliance with COVID-19 emergency measures (Table 3).

We examined the mediating effects of trust in government and trust in science and scientific community for each of relationships the relationship between political ideology, individualism worldview, fatalism, health literacy and prosociality, considered as influential variables, and compliance with COVID-19 emergency measures. The results demonstrated that all five independent variables have a significant

Table 2 Pearson's correlation coefficients matrix between variables, descriptive statistics and verification of construct validity

	1	2	3	4	5	6	7	8
Political ideology (Conservatism subscale of Authoritarianism, Conservatism, and Traditionalism scale)		0.18*	0.19*	−0.25*	−0.22*	−0.25*	−0.17*	−0.27*
Individualism worldview (Short-form version of individualism-communitarianism subscale of Cultural Cognition scale)			0.15*	−0.21*	−0.41**	−0.19*	−0.22*	−0.23*
Fatalism (Fatalism scale)				−0.16**	−0.18*	−0.19*	−0.28**	−0.30**
Health literacy (Short-Form Health Literacy Scale)					0.26*	0.18*	0.31**	0.26**
Prosociality (Instrument of Adults Prosocialness)						0.16*	0.19*	0.28**
Trust in government (Citizen Trust in Government Organizations scale)							0.21*	0.24*
Trust in science and scientific community (Instrument of Trust in Science and Scientist Inventory)								0.33**
Compliance with the COVID-19 emergency measures (Compliance with COVID-19 Prevention Guidelines scale)								
M	3.88	4.23	4.19	1.18	1.66	2.15	1.68	1.26
SD	0.64	0.93	0.62	0.55	0.39	1.12	0.72	0.86
CA	0.75	0.73	0.81	0.79	0.86	0.80	0.72	0.73
CR	0.79	0.83	0.86	0.74	0.84	0.90	0.78	0.80
AVE	0.62	0.60	0.58	0.69	0.61	0.75	0.63	0.68

M mean, *SD* standard deviation, *CA* Cronbach's alpha, *CR* construct reliability, *AVE* average variance extracted

*p-value <0.05, **p-value <0.01

Table 3 Coefficient estimates for the regression models proposed to determine relationships between independent variables and dependent variable

| | Model 1 | | | | Model 2 | | | | Model 3 | | | |
| | Trust in government | | | | Trust in science and scientists | | | | Compliance with the COVID-19 emergency measures | | | |
	B	ES	β	CI 95%	B	ES	β	CI 95%	B	ES	β	CI 95%
Constant	0.00	0.07	0.00	[−0.12 to 0.12]	0.00	0.06	0.00	[−0.12 to 0.12]	0.00	0.07	0.00	[−0.11 to 0.11]
Political ideology	−0.13*	0.09	−0.12*	[−0.21 to 0.05]	−0.11*	0.08	−0.11*	[−0.25 to 0.03]	−0.15*	0.07	−0.13*	[−0.31 to 0.02]
Individualism worldview	−0.11*	0.08	−0.10*	[−0.16 to 0.06]	−0.08*	0.06	−0.07*	[−0.18 to 0.02]	−0.18*	0.05	−0.17*	[−0.42 to 0.06]
Fatalism	−0.18**	0.05	−0.16**	[−0.39 to 0.03]	−0.30**	0.06	−0.27**	[−0.61 to 0.01]	−0.25**	0.05	−0.24**	[−0.52 to 0.03]
Health literacy	0.23*	0.07	0.20*	[0.14 to 0.32]	0.34**	0.09	0.28**	[0.23 to 0.44]	0.27**	0.08	0.22**	[0.18 to 0.36]
Prosociality	0.21*	0.07	0.19*	[0.12 to 0.29]	0.18*	0.05	0.17*	[0.09 to 0.27]	0.19**	0.05	0.15**	[0.11 to 0.27]
Trust in government									0.21*	0.11	0.20*	[0.09 to 0.33]
Trust in science and scientific community									0.23**	0.08	0.21**	[0.10 to 0.36]
R^2	0.15				0.24				0.46			

$β$ standardized regression coefficients, *CI* bootstrapping confidence interval

*p-value <0.05, **p-value <0.01

mediating effect on compliance with COVID-19 emergency measures through trust in government and trust in science and scientific community. Specifically, the mediation paths from political ideology (β = −0.06, 95% CI: −0.17 to 0.04), individualism worldview (β = −0.10, 95% CI: −0.26 to 0.04), fatalism (β = −0.13, 95% CI: −0.41 to 0.11), health literacy (β = 0.09, 95% CI: −0.09 to 0.26) and prosociality (β = 0.10, 95% CI: 0.03–0.18) to compliance with COVID-19 emergency measures via trust in government were significant. Additionally, political ideology (β = −0.09, 95% CI: −0.19 to 0.01), individualism worldview (β = −0.07, 95% CI: −0.18 to 0.04), fatalism (β = −0.11, 95% CI: −0.39 to 0.07), health literacy (β = 0.13, 95% CI: −0.03 to 0.29) and prosociality (β = 0.07, 95% CI: 0.01–0.11) significantly and indirectly through trust in science and scientific community contributed to compliance with the COVID-19 emergency measures. Moreover, political ideology (β = −0.13, 95% CI: −0.29 to 0.02), individualism worldview (β = −0.14, 95% CI: −0.32 to 0.07), fatalism (β = −0.18, 95% CI: −0.40 to 0.04), health literacy (β = 0.16, 95% CI: −0.05 to 0.37) and prosociality (β = 0.09, 95% CI: 0.03–0.13) exerted an indirect and significant effect on compliance with the COVID-19 emergency measures through both trust in government and trust in science and scientific community (Table 4).

Discussion

We developed and tested the theoretical and hypothetical model that helps us understand the intra- and inter-individual differences in waste pickers' adherence to COVID-19 emergency measures. We examined the contribution of political psychological and sociocultural factors to compliance with the mitigation measures of COVID-19. To the best of our knowledge, this is the first study to describe the association between political ideology, individualism worldview, fatalism, health literacy, prosociality, trust in government and trust in science and scientific community and compliance with the COVID-19 emergency measures among waste pickers in sub-urban slums and informal settlements.

The findings of this investigation supported the proposed model. We found that political ideology, individualism worldview, fatalism, health literacy and prosociality have both direct and indirect significant effects on waste pickers' compliance with the COVID-19 emergency measures. Furthermore, trust in government and trust in science and scientific community partially mediate the relationship between political ideology, individualism worldview, fatalism, health literacy and prosociality, considered as influential variables, and adherence to the COVID-19 emergency measures. Specifically, waste pickers in slum community with lower trust in government, science and scientific community generally are less likely to comply with the COVID-19 emergency measures.

The results of our study suggest that waste pickers living in an Iranian sub-urban slum community do not tend to comply with COVID-19-related legal and government regulations. Different ideologies entail different beliefs about the legitimate scope of government orders and the effectiveness of emergency measures during the ongoing crisis (Gadarian et al., 2021). Waste pickers who were more conservative

Table 4 Direct effects of the independent variables on compliance with the COVID-19 emergency measures and indirect effects through trust in government and trust in science and scientific community

		B	ES	β	CI 95%
Direct effect	Political ideology	− 0.15*	0.07	− 0.13*	[− 0.31 to 0.02]
	Individualism worldview	− 0.18*	0.05	− 0.17*	[− 0.42 to 0.06]
	Fatalism	− 0.25**	0.05	− 0.24**	[− 0.52 to 0.03]
	Health literacy	0.27**	0.08	0.22**	[0.18 to 0.36]
	Prosociality	0.19**	0.05	0.15**	[0.11 to 0.27]
	Trust in government	0.21*	0.11	0.20*	[0.09 to 0.33]
	Trust in science and scientific community	0.23**	0.08	0.21**	[0.10 to 0.36]
Indirect effects through					
Trust in government	Political ideology	− 0.07*	0.11	− 0.06*	[− 0.17 to 0.04]
	Individualism worldview	− 0.11*	0.08	− 0.10*	[− 0.26 to 0.04]
	Fatalism	− 0.15*	0.07	− 0.13*	[− 0.41 to 0.11]
	Health literacy	0.14**	0.06	0.09**	[− 0.09 to 0.26]
	Prosociality	0.11*	0.06	0.10*	[0.03 to 0.18]
Trust in science and scientific community	Political ideology	− 0.09*	0.04	− 0.09*	[− 0.19 to 0.01]
	Individualism worldview	− 0.10*	0.07	− 0.07*	[− 0.18 to 0.04]
	Fatalism	− 0.16**	0.05	− 0.11**	[− 0.39 to 0.07]
	Health literacy	0.19**	0.13	0.13**	[− 0.03 to 0.29]
	Prosociality	0.06*	0.08	0.07*	[0.01 to 0.11]
Trust in government & Trust in science and scientific community	Political ideology	− 0.12**	0.03	− 0.13**	[− 0.29 to 0.02]
	Individualism worldview	− 0.13**	0.02	− 0.14**	[− 0.32 to 0.07]
	Fatalism	− 0.18**	0.05	− 0.18**	[− 0.40 to 0.04]
	Health literacy	0.16**	0.04	0.16**	[− 0.05 to 0.37]
	Prosociality	0.08*	0.03	0.09*	[0.03 to 0.13]
Total effect		0.19**	0.08	0.16**	[0.09 to 0.29]

β standardized regression coefficients, *CI* bootstrapping confidence interval

*p-value < 0.05, **p-value < 0.01

had less trust in government, science and scientific community. More conservative waste pickers were more likely to ignore guidelines for COVID-19. In contrast, liberal beliefs were found to have a positive and significant effect on trust in government, science and scientific community. The culture influences trust in government, science, scientific community and pandemic-related measure compliance (Westjohn et al., 2022). The present research highlights the importance of culture in the face of COVID-19 pandemic. We provided evidence that people in individualistic cultures are less concerned with the collective welfare. More concretely, waste pickers in more individualistic (versus collectivistic) communities are less likely to comply with COVID-19 mitigation protocols. We found evidence that the perception of fatalism significantly affects trust in government, science and scientific community as well as compliance with COVID-19 preventive measures. Waste pickers ignored complying with the emergency measures because they believed that they were

destined to be infected with the virus. Fatalistic thinking, more specifically, belief in predetermination, luck and pessimism, was found to be significantly associated with an unwillingness to follow COVID-19 emergency measures. Our research showed that lower health literacy leads to lower trust in governmental organizations, health care system, science and scientific community. Health literacy plays a vital role in maintaining a high compliance with infection prevention behaviors (Lastrucci et al., 2021). We showed that prosocial and unselfish behaviors, tendency to enact sharing, helping, and caring actions, as well as feeling emphatic with others and their needs, are important for waste pickers in Iranian sub-urban slum communities and essential in the fight against COVID-19.

Implications for Theory

The findings of this study have several contributions for scholars working on studies related to medical sociology and social medicine. The present study implicitly verifies the common theoretical perspective which states that pandemic is not simply a medical and health-related phenomenon. The pandemic has vast political and social implications, affecting society as a whole. The COVID-19 pandemic has challenged empirical understandings in the policy of health (Kavanagh & Singh, 2020). Under cover of pandemic control and management, some governments have tried to limit democratic rules. Also, legal and government regulations in response to the pandemic have been considered a serious threat to the political institutions that safeguard democracy. These policies of health have complicated democratic processes. Nevertheless, democratic governments are more effective in controlling and managing pandemics, than authoritarian regimes. Analyses of the impact of COVID-19 pandemic on the established democracies suggest positive but temporary effects on political trust and significant yet fleeting bumps for current political leaders. The greater part of the evidence points to visible effects only on the surface, but not in the foundation of democracy (Rapeli & Saikkonen, 2020). Democracies need to be recognized as flexible, vibrant and dynamic. Democratic participation and deliberation during the pandemic not only contribute secure democratic legitimacy but also help to discover the right solutions (Parry et al., 2021).

Implications for Practice

From a practical perspective, the current study provides many health communication strategies for the stakeholders involved in managing the ongoing pandemic. It will be essential to take steps towards promoting adherence to international rules and regulations aimed at controlling the spread of the virus. The government must employ multiple solutions, including improving co-operation with people with leadership roles in local communities, increasing government transparency, and supporting citizens unequally suffering owing to the COVID-19 pandemic (Sata Shanka & Moges Menebo, 2021).

Instituting slum emergency planning committees in every urban informal settlement seems to be crucial for preventing the spread of the virus at a practical level.

These committees must be networked across a slum, across entire metropolitan regions and across all cities in country. Government should avoid top-down directives forced upon waste pickers living in informal settlements (Corburn et al., 2020). Slum-led committees must also be empowered to lead on the public health and disease messaging, and help decide the appropriate use of technologies in communication to waste pickers who may be illiterate or have minimal health or science education (van der Heijden et al., 2019). Thus, creating health messages about the possible complications of the COVID-19 on the waste packer's health along with highlighting the possible negative consequences of the COVID-19 on the waste packer's economic situation and their social life is necessary. Waste pickers should be encouraged to share these messages across their informal social circles and be involved in motivating their community members to adhere COVID-19 legal and government regulations and norms. When attempting to motivate waste pickers to comply with the COVID-19 emergency measures, health risk communicators must focus on encouraging waste packers to believe that they can easily perform the recommended action and should regularly provide guidance to overcome the possible difficulties of accomplishing these preventive measures.

In addition, government must provide an immediate guarantee of payments to waste packers. These payments must compensate for the impacts of any proposed COVID-19 lockdown measures. Implementing such strategies will require consideration for the immediate provision of PPE and basic supplies needed to serve their populations (Tampe, 2021).

Many waste packers rely on informal health providers as their first entry into the health care system, either due to cost, trust, or access issues. We suggest incorporating the informal providers into all pandemic response plans in the urban informal settlements. Furthermore, developing local leadership will be indispensable. Employing youth and local people as community health workers (CHWs) can also address stigmatization and discrimination.

Moreover, promoting transparent and ethical research practices within the network of scientists and political institutions and informing the citizens of the particular aspects and key features of the scientific process, are needed.

Strengths and Limitations

This quantitative study collects sufficient information on potential and actual determinants of COVID-19 emergency measures to shed light on theoretical and practical implications for democracy and human rights. The present study has a rich inclusion of instruments on political psychological and sociocultural determinants of COVID-19 protective measures. However, this study has several limitations, which are summarized below. The COVID-19 related compliance behaviors were self-reported by participants, and the objective measures and actual compliance behaviors cannot be verified. Such an evaluation can lead to bias and misrepresentation. Future research might seek to examine actual compliance behaviors against COVID-19. The sample only included waste pickers that lived in an Iranian sub-urban slum community. It remains uncertain whether the

results can be extrapolated to other social groups living in slum communities and to other communities. Future work is needed to determine whether our results are extrapolatable outside of this context and generalizable to broader populations. We adopted a cross-sectional research design to evaluate the association between political psychological and sociocultural factors and adherence to the COVID-19 emergency measures. We cannot claim causality. Scholars are encouraged to adopt longitudinal and experimental research designs to address issues.

Conclusion

This study points to waste pickers of an Iranian sub-urban slum community at high risk for non-compliance with the COVID-19 emergency measures during the lockdown. The degree of adherence to COVID-19 legal and government regulations is varied according to political ideology, individualism worldview, fatalism, health literacy, prosociality and trust in government, science and scientific community. The current results add to a limited but growing body of the existing literature on the relevant roles of political psychological and sociocultural determinants in shaping how waste pickers behave during the ongoing pandemic and promoting adherence to COVID-19 emergency measures. Political and Humanitarian intervention can apply in this situation where normal social order has disrupted. The democracy-based and human rights-based approach provides a flexible framework for proceeding public health with justice. This framework could transform morally good and correct health behaviors into law enforcements in critical domains relevant to COVID-19. There will be a need to provide necessary outreach, training and services to the waste pickers of informal settlements. Immediate multidisciplinary research is needed to document how the waste pickers of slum community are managing and to ensure interventions are improving the compliance with COVID-19 emergency measures.

Declarations

Conflict of Interest The authors declare that they have no conflicts of interest.

Ethical Approval All procedures were performed in accordance with provisions from the Declaration of Helsinki (1964) and its later amendments regarding research on human participants. We received ethical approval to conduct this study from the Ethics and Research Committee of the Shahid Beheshti University of Medical Science. Participants signed the informed consent form prior to answering the survey. Data was collected anonymously to ensure confidentiality.

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