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A global assessment of the level of trust in information sources and adherence to COVID-19 related preventive health behaviors: cross-sectional survey study

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Abstract

Background Initial management of coronavirus disease 2019 (COVID-19) focused on preventing spread and providing supportive care. Authorities disseminated disease information and enforced preventive measures. This intricate task was affected by factors such as initial emotional distress or perceived risk, which influenced adherence to public health recommendations. This study examined the association between trust in local health authorities and national/regional leaders who have provided information about COVID-19 and adherence to COVID-19 preventive behaviors.

Methods Data from the International COVID-19 Awareness and Responses Evaluation (iCARE) study was used for the analyses (surveys 5–15, $n = 14,453$) from 116 countries (September 2020–January 2022). The main predictor was participants' trust, which was categorized into four levels. The primary outcome was adherence to preventive behaviors: (1) handwashing, (2) mask wearing, (3) physical distancing, (4) avoiding gatherings, and (5) self-quarantining. Additional variables included demographics, socioeconomic status, health history and COVID-19 perceptions. We conducted multivariable logistic regressions to determine the association between the level of trust in local health authorities and national/regional leaders and adherence to COVID-19-related preventive health behaviors.

Results 14,453 respondents worldwide, 2852 (25.43%) reported no trust or no trust at all in political authorities, and 1847 (16.84%) reported no trust or no trust at all in healthcare authorities. The unadjusted regression models revealed that those without trust in political and health authorities were less likely to adhere to all the included preventive behaviors. Multivariable models indicated that those who did not trust at all in political leaders had lower odds of adopting self-quarantine (OR = 0.70, 95% CI: 0.49–0.99) and of avoiding gatherings (OR = 0.59, 95% CI: 0.42–0.84). Distrust in healthcare authorities also lowered the odds of adherence to protective behaviors, particularly avoiding gatherings (OR = 0.37, 95% CI: 0.25–0.53), and self-quarantine (OR = 0.49, 95% CI: 0.33–0.72).

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Conclusion Our findings revealed a positive association between trust in health and political authorities, and adherence to preventive health behaviors, independent of demographic, socioeconomic, or perceptual/belief factors. Therefore, prioritizing trust between public health institutions and people is crucial for effectively managing infectious disease outbreaks. Future steps must be tailored to each population, addressing privacy concerns, enhancing community communication, and encouraging public engagement in health policy.

Keywords COVID-19, Global, Health behaviors, Level of trust

Background

Coronavirus disease 2019 (COVID-19) was a global health emergency that challenged healthcare and public health systems [1–3]. The lack of knowledge about the disease and its underlying pathophysiology made management extremely complex [1, 2]. The main obstacles to controlling the disease were the high transmission rate, heterogeneous symptomatology, the absence of a vaccine, and the lack of targeted therapy [2–4]. Therefore, before approved vaccines were available, situational management prioritized stopping the spread of the disease and providing supportive care [2–4]. During pandemics, local, national, and global authorities are responsible for disseminating accurate information and enforcing preventive measures to control the spread of the disease [5, 6]. Some of these behaviors included the use of face masks, stay-at-home orders, hand washing, travel restrictions, and physical distancing [7]. However, dissatisfaction with political authorities or healthcare services is a common barrier to implementing recommended protective behaviors [8].

In addition to dissatisfaction, initial emotional distress, the level of trust in the general population related to information sources and/or perceived risk could influence the unconditional willingness to adhere to public health recommendations [6, 9, 10]. A longitudinal study in Chile found that government trust indirectly influenced the acceptance of protective behaviors against COVID-19 in young adults [11]. Similarly, a longitudinal cohort study in Switzerland showed that young adults with low government trust had less compliance with public health measures [12]. Additionally, the level of trust among information sources varies across stakeholders [8]. While healthcare professionals are often among the most trusted sources of information, trust in public media is more heterogeneous and may vary depending on the nature, consistency, and ideological orientation of messaging [6, 13].

Moreover, various sociodemographic characteristics that evolve over time, significantly influence the adoption of preventive health behaviors. A meta-analysis of respiratory infectious disease epidemics and pandemics showed that women were 50% more likely to adopt non-pharmaceutical, preventive health behaviors than men were [14]. Prior to the COVID-19 pandemic, a literature review on the influenza pandemic concluded that

elderly women who were well-educated and self-identified as non-white were associated with increased chances of adopting protective measures behaviors [15]. On the other hand, a more recent analysis of COVID-19 stated that adhering to face mask recommendations among women and men was less likely in the employed group or if they were living in a country with greater gender equity [16]. Therefore, understanding the numerous factors influencing adherence to preventive health behaviors is critical.

However, most studies are limited in their geographical scope or focus on specific populations [11]. Consequently, from a public policy standpoint, it is imperative to understand the factors that influence adherence to preventive measures globally [14–16]. This study aims to evaluate the association between the level of trust of the general population in local health authorities and national/regional leaders who have provided information about COVID-19 and adherence to COVID-19 preventive behaviors. We hypothesized that a higher level of trust in the information source would increase adherence to preventive health behaviors among the participants.

Methods

Study design

Data from the International COVID-19 Awareness and Responses Evaluation (iCARE) study (<https://icare.mbmc-cmcm.ca/>) led by the Montreal Behavioural Medicine Centre, Quebec, Canada was used for the analyses. The design and methods of this study have been comprehensively outlined in a prior publication [17]. This cross-sectional survey study was conducted across multiple countries and waves, and focused on public awareness, attitudes, and reactions to COVID-19 public health policies. The surveys included questions about sociodemographic characteristics, physical/mental health history, beliefs and behaviors related to COVID-19, vaccination, and testing [17, 18]. Data were collected from the iCARE global convenience and snowball sampling strategy, and adapted and modified for the country-specific context. The survey was administered online via LimeSurvey® (Montreal, Canada) and through a network of more than 200 international collaborators [17].

Table 1 Characteristics of survey respondents by level of trust, political authorities (n = 11,216) and health authorities (n = 10,966)

CHARACTERISTIC/TRUST	Total		Trust to a great extent		Trust somewhat		Do not trust		Do not trust at all		p-value ^A
Political Authorities, n (%)	11,216	(100.00)	2958	(26.37)	5406	(48.20)	1580	(14.09)	1272	(11.34)	
Age (y), mean ± SD ^B	46.07	16.94	48.81	17.60	46.32	17.04	42.34	15.77	43.25	15.02	
Age categories, n (%)											<.0001
17–24	1380	(12.31)	331	(11.19)	650	(12.03)	229	(14.49)	170	(13.36)	
25–64	7983	(71.19)	1944	(65.74)	3855	(71.32)	1192	(75.44)	992	(77.99)	
65y or more	1851	(16.51)	682	(23.06)	900	(16.65)	159	(10.06)	110	(8.65)	
Missing/Unknown	2	(0.02)									
Biological Sex, n (%)											<.0001
Male	2911	(26.15)	792	(26.95)	1296	(24.13)	437	(27.92)	386	(30.73)	
Female	8219	(73.85)	2147	(73.05)	4074	(75.87)	1128	(72.08)	870	(69.27)	
Missing/Unknown	86	(0.77)									
SDI ^C Country, n (%)											<.0001
Low-middle	1287	(11.68)	234	(8.01)	483	(9.13)	315	(20.28)	255	(20.33)	
High	9735	(88.32)	2689	(91.99)	4809	(90.87)	1238	(79.72)	999	(79.67)	
Missing/Unknown	194	(1.73)									
Area, n (%)											<.0001
Rural	1423	(12.97)	391	(13.45)	660	(12.43)	205	(13.43)	167	(13.54)	
Suburban	3082	(28.08)	896	(30.81)	1546	(29.13)	373	(24.44)	267	(21.65)	
Urban	6470	(58.95)	1621	(55.74)	3102	(58.44)	948	(62.12)	799	(64.80)	
Missing/Unknown	241	(2.15)									
Education level, n (%)											<.001
Low	2308	(20.98)	682	(23.41)	1103	(20.75)	279	(18.15)	244	(19.73)	
High	8694	(79.02)	2231	(76.59)	4212	(79.25)	1258	(81.85)	993	(80.27)	
Missing/Unknown	214	(1.91)									
Work status, n (%)											<.0001
Unemployed	4856	(43.56)	1424	(48.29)	2333	(43.44)	655	(41.72)	444	(35.27)	
Employed	6293	(56.44)	1525	(51.71)	3038	(56.56)	915	(58.28)	815	(64.73)	
Missing/Unknown	67	(0.60)									
Annual perceived household income, n (%)											<.0001
Bottom third	1630	(16.45)	420	(15.77)	731	(15.24)	266	(19.94)	213	(19.12)	
Middle third	5501	(55.53)	1490	(55.95)	2665	(55.57)	734	(55.02)	612	(54.94)	
Top third	2776	(28.02)	753	(28.28)	1400	(29.19)	334	(25.04)	289	(25.94)	
Missing/Unknown	1309	(11.67)									
Number of adults ≥ 18y in the household, n (%)											<.001
0	1740	(15.61)	431	(14.66)	860	(15.99)	239	(15.20)	210	(16.71)	
1	4787	(42.95)	1303	(44.33)	2362	(43.93)	603	(38.36)	519	(41.29)	
2 or more	4618	(41.44)	1205	(41.00)	2155	(40.08)	730	(46.44)	528	(42.00)	
Missing/Unknown	71	(0.63)									
Number of children ≤ 18y in the household, n (%)											<.0001
0	8008	(72.50)	2195	(75.20)	3918	(73.37)	1067	(68.93)	828	(66.83)	
1	1485	(13.44)	359	(12.30)	683	(12.79)	243	(15.70)	200	(16.14)	
2 or more	1553	(14.06)	365	(12.50)	739	(13.84)	238	(15.37)	211	(17.03)	
Missing/Unknown	170	(1.52)									
Chronic disease, n (%)											<.0001
None	7111	(63.40)	1776	(60.04)	3432	(63.49)	1063	(67.28)	840	(66.04)	
At least one	4105	(36.60)	1182	(39.96)	1974	(36.51)	517	(32.72)	432	(33.96)	
Mental disease, n (%)											<.0001
None	9002	(80.26)	2439	(82.45)	4363	(80.71)	1228	(77.72)	972	(76.42)	
At least one	2214	(19.74)	519	(17.55)	1043	(19.29)	352	(22.28)	300	(23.58)	
Believed to have the infection, n (%)											<.0001
No	9048	(87.45)	2531	(90.52)	4486	(89.20)	1162	(82.53)	869	(78.08)	
Yes, but I have recovered	1032	(9.97)	207	(7.40)	424	(8.43)	209	(14.84)	194	(17.25)	

Table 1 (continued)

CHARACTERISTIC/TRUST	Total		Trust to a great extent		Trust somewhat		Do not trust		Do not trust at all		p-value ^A
Yes, and I am still having symptoms	223	(2.16)	48	(1.72)	105	(2.09)	32	(2.27)	38	(3.41)	
Yes, but I am not having symptoms	43	(0.42)	10	(0.36)	14	(0.28)	5	(0.36)	14	(1.26)	
Missing/Unknown	870	(7.76)									
Do you think you are in high risk, n (%)											<.0001
No	6504	(67.28)	1783	(68.76)	3165	(68.39)	824	(62.24)	732	(65.24)	
Yes	3163	(32.72)	810	(31.24)	1463	(31.61)	500	(37.76)	390	(34.76)	
Missing/Unknown	1549	(13.81)									
Protective measures importance, n (%)											<.0001
Important	10,364	(92.92)	2931	(99.29)	5270	(97.74)	1358	(86.88)	805	(64.55)	
Non-important	790	(7.08)	21	(0.71)	122	(2.26)	205	(13.12)	442	(35.45)	
Missing/Unknown	62	(0.55)									
Recommendation beliefs, n (%)											<.0001
Too strict	1459	(13.26)	142	(4.83)	447	(8.37)	351	(23.05)	519	(43.18)	
About right	6111	(55.54)	2042	(69.53)	3272	(61.27)	562	(36.84)	236	(19.63)	
Too lenient	3432	(31.19)	753	(25.64)	1621	(30.36)	611	(40.12)	447	(37.19)	
Missing/Unknown	214	(1.91)									
Health Authorities, n (%)	10,966	(100.00)	3761	(34.30)	5358	(48.86)	1075	(9.80)	772	(7.04)	
Age (y), mean ± SD	45.82	17.07	46.48	17.58	46.29	16.96	43.48	15.54	43.31	14.24	
Age categories, n (%)											<.0001
17–24	1382	(12.60)	525	(143.96)	636	(11.87)	138	(12.84)	83	(10.75)	
25–64	7816	(71.29)	2553	(67.90)	3814	(71.20)	825	(76.74)	624	(80.83)	
65y or more	1766	(16.11)	682	(18.14)	907	(16.93)	112	(10.42)	65	(8.42)	
Missing/Unknown	2	(0.02)									
Biological Sex, n (%)											<.001
Male	2852	(26.21)	1004	(26.99)	1303	(24.43)	305	(28.53)	240	(31.66)	
Female	8029	(73.79)	2716	(73.01)	4031	(75.57)	764	(71.47)	518	(68.34)	
Missing/Unknown	85	(0.78)									
SDI ^C Country, n (%)											
Low-middle	1283	(11.90)	296	(7.96)	637	(12.15)	213	(20.09)	137	(18.03)	
High	9498	(88.10)	3421	(92.04)	4607	(87.85)	847	(79.91)	623	(81.97)	
Missing/Unknown	185	(1.69)									
Area, n (%)											<.0001
Rural	1377	(12.84)	486	(13.19)	624	(11.87)	142	(13.67)	125	(16.82)	
Suburban	2948	(27.49)	1045	(28.35)	1477	(28.10)	274	(26.37)	152	(20.46)	
Urban	6400	(59.67)	2155	(58.46)	3156	(60.03)	623	(59.96)	466	(62.72)	
Missing/Unknown	241	(2.20)									
Education level, n (%)											0.853
Low	2266	(21.06)	798	(21.54)	1091	(20.72)	221	(21.17)	156	(20.97)	
High	8492	(78.94)	2907	(78.46)	4174	(79.28)	823	(78.83)	588	(79.03)	
Missing/Unknown	208	(1.90)									
Work status, n (%)											<.0001
Unemployed	4739	(43.49)	1703	(45.47)	2374	(44.58)	408	(38.45)	254	(33.16)	
Employed	6158	(56.51)	2042	(54.53)	2951	(55.42)	653	(61.55)	512	(66.84)	
Missing/Unknown	69	(0.63)									
Annual perceived household income, n (%)											<.001
Bottom third	1599	(16.55)	551	(16.37)	741	(15.76)	163	(17.41)	144	(21.85)	
Middle third	5382	(55.70)	1858	(55.22)	2614	(55.58)	539	(57.59)	371	(56.30)	
Top third	2682	(27.76)	956	(28.41)	1348	(28.66)	234	(25.00)	144	(21.85)	
Missing/Unknown	1303	(11.88)									
Number of adults ≥ 18y in the household, n (%)											<.0001
0	1700	(15.60)	572	(15.27)	836	(15.70)	177	(16.59)	115	(15.17)	
1	4666	(42.83)	1658	(44.27)	2319	(43.55)	375	(35.15)	314	(41.42)	

Table 1 (continued)

CHARACTERISTIC/TRUST	Total		Trust to a great extent		Trust somewhat		Do not trust		Do not trust at all		p-value ^A
2 or more	4529	(41.57)	1515	(40.45)	2170	(40.75)	515	(48.27)	329	(43.50)	
Missing/Unknown	71	(0.65)									
Number of children ≤ 18y in the household, n (%)											<.0001
0	7787	(72.15)	2757	(74.17)	3849	(72.90)	699	(66.51)	482	(64.70)	
1	1466	(13.58)	474	(12.75)	686	(12.99)	176	(16.75)	130	(17.45)	
2 or more	1540	(14.27)	486	(13.08)	745	(14.11)	176	(16.75)	133	(17.85)	
Missing/Unknown	173	(1.58)									
Chronic disease, n (%)											0.284
None	6953	(63.41)	2343	(62.30)	3414	(63.72)	700	(65.12)	496	(64.25)	
At least one	4013	(36.59)	1418	(37.70)	1944	(36.28)	375	(34.88)	276	(35.75)	
Mental disease, n (%)											<.001
None	8814	(80.38)	3059	(81.33)	4332	(80.85)	838	(77.95)	585	(75.78)	
At least one	2152	(19.62)	703	(18.67)	1026	(19.15)	237	(22.05)	187	(24.22)	
Believed to have the infection, n (%)											<.0001
No	8842	(87.44)	3212	(90.94)	4344	(87.90)	792	(82.93)	494	(72.33)	
Yes, but I have recovered	1007	(9.96)	251	(7.11)	483	(9.77)	126	(13.19)	147	(21.52)	
Yes, and I am still having symptoms	222	(2.20)	61	(1.73)	100	(2.02)	30	(3.14)	31	(4.54)	
Yes, but I am not having symptoms	41	(0.41)	8	(0.23)	15	(0.30)	7	(0.73)	11	(1.61)	
Missing/Unknown	854	(7.79)									
Do you think you are in high risk, n (%)											<.001
No	6303	(66.80)	2265	(68.53)	3035	(66.75)	552	(61.13)	451	(66.32)	
Yes	3132	(33.20)	1040	(31.47)	1512	(33.25)	351	(38.87)	229	(33.68)	
Missing/Unknown	1531	(13.96)									
Protective measures importance, n (%)											<.0001
Important	10,131	(92.90)	3728	(99.36)	5143	(96.40)	873	(82.13)	388	(51.32)	
Non-important	774	(7.10)	24	(0.64)	192	(3.60)	190	(17.87)	368	(48.68)	
Missing/Unknown	61	(0.56)									
Recommendation beliefs, n (%)											<.0001
Too strict	1430	(13.30)	169	(4.54)	581	(11.06)	285	(27.40)	395	(53.52)	
About right	5962	(55.44)	2493	(66.94)	3038	(57.86)	335	(32.21)	96	(13.01)	
Too lenient	3361	(31.26)	1062	(28.52)	1632	(31.08)	420	(40.28)	247	(33.47)	
Missing/Unknown	213	(1.94)									

^AP-values were determined through Chi2 test^BSD: Standard Deviation^CSDI: Sociodemographic index, low-middle (0–0.7905) and high (0.7905–1)

Bold p-value < 0.05 was considered statistically significant

Participants

This study included data from Survey 5 to Survey 15 ($n = 14,453$), collected between September 15, 2020, and January 11, 2022, as the measure of trust in actors who provide COVID-19 information was introduced during those survey waves. The study included participants aged 17 years or older from 116 countries, all of whom provided informed consent.

Independent variable: trust in information sources

The study's main predictor was participants' level of trust in entities that have provided information about COVID-19. It was assessed with the question: "Please rate your level of trust in the following people and organizations who have provided information about COVID-19: a. My

local health authorities, b. my national political leader and c. regional political leader". National and regional political leaders were combined into a single variable called political leaders after initial analysis revealed similar trust levels across these groups, with only a very weak association between leadership level and trust (Cramér's $V = 0.07$). The level of trust variable was then categorized as follows: a. I trust to a great extent, b. I trust somewhat, c. I do not trust (distrust), d. I do not trust at all. Detailed information on the iCARE questionnaires for each period of data collection can be found online (<https://osf.io/nswcm/>).

Outcome measures

The main outcome was the adoption of preventive behaviors. It was assessed by the frequency with which participants adopted each behavior in the previous seven days. The following behaviors included (1) hand washing with soap and water, (2) wearing a face mask, (3) staying at least 1–2 m away from other people, (4) avoiding gatherings (working at home rather than going to work or school, avoiding going out to bars/pubs/restaurants, avoiding large social gatherings, avoiding small social gatherings, avoiding indoor social), and (5) self-quarantining if someone had the virus or believed they had the virus. The answers were categorized as binary variables, such as adherence (most of the time) or non-adherence (otherwise). We include those variables because they were proposed as evidence-based preventive measures and align with recommendations from global public health authorities (7).

Statistical analysis

This analysis was conceptually guided by constructs from the COM-B model and the Health Belief Model, which informed the selection of variables and interpretation of relationships. In this framework, adherence to preventive behaviors is influenced by capabilities, opportunities, and motivations, as well as perceptions [16]. Trust in the actors who provided information sources is conceptualized in this study as a key motivational and perceptual factor that may influence adherence behaviors.

Descriptive analysis was performed to summarize participant characteristics, stratified by level of trust in political and healthcare authorities. Observations were excluded from the analysis if data were missing or if participants indicated the response ‘I don’t know/I prefer not to answer’. A bivariate analysis was conducted to examine differences in characteristics as a function of trust levels in local health authorities and political governments. Bivariate analyses were conducted using Pearson’s chi-square tests to examine (1) differences in participant characteristics across levels of trust in local health authorities and political governments, and (2) the association between trust levels and adherence to preventive behaviors.

Afterward, multivariable logistic regression models were conducted. We included the following variables as part of the analysis country of residence categorized by Socio-Demographic Index (SDI), age, educational attainment, perception of home income, living area, chronic disease, mental disease, employment status, living alone or with more persons, living with kids, the perception of the importance of preventive measures, the perception of the authorities’ actions, and the perception of the risk of being infected. We assessed variance inflation factors to rule out multicollinearity. Odds ratios (ORs) with their

corresponding 95% confidence intervals (CIs) were calculated and reported for each model. All statistical tests were two-tailed, and a p -value < 0.05 was considered statistically significant. Statistical analyses were conducted using SAS, version 9.4 (SAS Institute Inc., Cary, North Carolina, United States).

Results

Descriptive characteristics

A total of 14,453 participants were included in the analysis, with the main findings summarized in Table 1. Of these, 11,216 participants responded about their level of trust in political leaders, and 10,966 about their trust in health authorities. Most respondents identified their biological sex as female, accounting for 8219 (73.85%) of those responding about political leaders and 8029 (73.79%) of those responding about health authorities. Regarding age, the majority of respondents were between 25 and 64 years old, representing 7983 (71.19%) among the political leaders responders and 7816 (71.29%) among the health authority responders.

Most participants resided in countries with a high SDI (88.32% for political authority and 88.10% for health authority responders) and had attained a high level of education (79.02% and 78.94%, respectively). Approximately half of the respondents were employed (56.44% and 56.51%), lived in urban areas (58.95% and 59.67%), and had an annual income in the middle third (55.53% and 55.70%).

Factors associated with adoption of protective behaviours

Regarding the adoption of preventive behaviors (Table 2), for social distancing, 80.91% of respondents who trusted political authorities to a great extent adhered to this behavior, 76.76% who trusted somewhat, 67.22% who did not trust (distrust), and 56.83% who did not trust at all ($p < 0.0001$). Similar trends were observed for other protective behaviors such as wearing a face mask, hand washing, avoiding gatherings, and self-quarantining. Trust in health authorities showed comparable patterns, with a higher percentage of responders adhering to protective behaviors among those with greater trust. For instance, 95.45% of respondents who trusted health authorities greatly avoided gatherings, while only 68.52% of respondents who did not trust at all avoided gatherings ($p < 0.0001$).

Multivariable models demonstrated that who do not trust at all and distrust in political leaders reduced the odds of avoiding gatherings (OR = 0.59, 95% CI: 0.42, 0.84) and (OR = 0.51, 95% CI: 0.37–0.69) respectively. Distrust in political leaders lowered the odds of adhering to self-quarantine (OR = 0.58, 95% CI: 0.42–0.79). Distrust at all in healthcare authorities lowered the odds of adopting protective behaviors, particularly avoiding

Table 2 Preventive behaviors by level of trust in information sources, political authorities and health authorities

PROTECTIVE BEHAVIORS/LEVEL OF TRUST	Total		Trust to a great extent		Trust somewhat		Do not trust		Do not trust at all		p-value ^A
Political Authorities, n (%)	11,216	(100.00)	2958	(26.37)	5406	(48.20)	1580	(14.09)	1272	(11.34)	
Hand washing, n (%)											<.0001
Non-Adherence	1481	(13.24)	298	(10.07)	662	(12.27)	278	(17.68)	243	(19.32)	
Adherence	9701	(86.76)	2660	(89.93)	4732	(87.73)	1294	(82.32)	1015	(80.68)	
Wearing a face mask, n (%)											<.0001
Non-Adherence	704	(6.32)	130	(4.42)	223	(4.15)	135	(8.59)	216	(17.24)	
Adherence	10,442	(93.68)	2814	(95.58)	5155	(95.85)	1436	(91.41)	1037	(82.76)	
Staying at least 2 m away from other people, n (%)											<.0001
Non-Adherence	2877	(25.73)	564	(19.09)	1253	(23.24)	516	(32.78)	544	(43.17)	
Adherence	8303	(74.27)	2390	(80.91)	4139	(76.76)	1058	(67.22)	716	(56.83)	
Avoiding gatherings, n (%)											<.0001
Non-Adherence	1005	(8.96)	143	(4.83)	372	(6.88)	200	(12.66)	290	(22.80)	
Adherence	10,211	(91.04)	2815	(95.17)	5034	(93.12)	1380	(87.34)	982	(77.20)	
Self-quarantine, n (%)											<.0001
Non-Adherence	792	(14.14)	149	(10.32)	295	(11.44)	171	(19.54)	177	(25.18)	
Adherence	4808	(85.86)	1295	(89.68)	2283	(88.56)	704	(80.46)	526	(74.82)	
Health Authorities, n (%)	10,966	(100.00)	3761	(34.30)	5358	(48.86)	1075	(9.80)	772	(7.04)	
Hand washing, n (%)											<.0001
Non-Adherence	1457	(13.33)	430	(11.44)	659	(12.33)	198	(18.52)	170	(22.31)	
Adherence	9476	(86.67)	3328	(88.56)	4685	(87.67)	871	(81.48)	592	(77.69)	
Wearing a face mask, n (%)											<.0001
Non-Adherence	692	(6.35)	156	(4.17)	244	(4.57)	108	(10.18)	184	(24.34)	
Adherence	10,204	(93.65)	3585	(95.83)	5094	(95.43)	953	(89.82)	572	(75.66)	
Staying at least 2 m away from other people, n (%)											<.0001
Non-Adherence	2823	(25.82)	725	(19.33)	1339	(25.03)	376	(35.17)	383	(50.20)	
Adherence	8109	(74.18)	3026	(80.67)	4010	(74.97)	693	(64.83)	380	(49.80)	
Avoiding gatherings, n (%)											<.0001
Non-Adherence	968	(8.83)	171	(4.55)	399	(7.45)	155	(14.42)	243	(31.48)	
Adherence	9998	(91.17)	3590	(95.45)	4959	(92.55)	920	(85.58)	529	(68.52)	
Self-quarantine, n (%)											<.0001
Non-Adherence	781	(14.12)	172	(9.24)	363	(13.63)	112	(19.51)	134	(31.02)	
Adherence	4750	(85.88)	1689	(90.76)	2301	(86.37)	462	(80.49)	298	(68.98)	

^AP-values were determined through Chi2 test

Bold p-value < 0.05 was considered statistically significant

gatherings (OR=0.37, 95% CI: 0.25–0.53), self-quarantine (OR=0.50, 95% CI: 0.34–0.74) and staying at least 1–2 m away from other people (OR=0.62, 95% CI: 0.50–0.78). Indeed, those who did not trust at all had even lower odds of adhering to these protective behaviors ($p < 0.05$) (Table 3).

In the model with trust in health authorities as the main predictor, female respondents were more likely to adhere to all protective behaviors, such as handwashing (OR=2.23, 95% CI: 1.93–2.58) and self-quarantine (OR=1.80, 95% CI: 1.45–2.23), when adjusted for all included variables. In contrast, individuals living in low- and middle-income countries and those with lower household incomes were less likely to practice protective measures, such as handwashing (OR=0.75, 95% CI: 0.61–0.92; OR=0.73, 95% CI: 0.59–0.91). However, the level of education, the presence of chronic or mental illness,

employment status, the number of family members or the presence of children did not show a significant association with adherence behaviors. Regarding the political leaders trust as the main predictor model, responders who believed they had an infection and still exhibited symptoms were less likely to follow protective behaviors, such as handwashing (OR=0.55, 95% CI: 0.36–0.84), wearing facemasks (OR=0.28, 95% CI: 0.17–0.48), and avoiding gatherings (OR=0.44, 95% CI: 0.25–0.78).

Finally, individuals who believed the recommendations were either too lenient or just right were more likely to adhere to all protective behaviors. In contrast, those who considered the measures unimportant were less likely to comply across all models. The factors associated with adherence to protective behaviors from the multivariable logistic model are presented in Additional file 1: Table S1–S2.

Table 3 Multivariable logistic regression of level of trust and adherence to protective behaviors

Protective behaviors/Level of trust	Hand washing		Wearing a face mask		Staying at least 2 m away from other people		Avoiding gatherings		Self-quarantine	
	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value	OR (95% CI)	p-value
Political leaders										
To a great extent (ref)										
Somewhat	0.77 (0.64, 0.91)	.003	1.18 (0.90, 1.55)	.242	0.87 (0.75, 0.99)	.049	0.72 (0.57, 0.93)	<.001	1.05 (0.81, 1.37)	.705
Do not trust	0.61 (0.48, 0.77)	<.0001	1.04 (0.71, 1.50)	.857	0.83 (0.68, 1.02)	.071	0.51 (0.37, 0.69)	<.0001	0.58 (0.42, 0.79)	<.001
Do not trust at all	0.8 (0.60, 1.05)	.107	0.92 (0.65, 1.32)	.664	0.82 (0.65, 1.03)	.082	0.59 (0.42, 0.84)	.003	0.71 (0.50, 1.01)	.057
Health authority										
To a great extent (ref)										
Somewhat	0.84 (0.71, 0.98)	.029	0.99 (0.76, 1.31)	.993	0.72 (0.63, 0.82)	<.0001	0.62 (0.49, 0.78)	<.0001	0.63 (0.49, 0.80)	<.001
Do not trust	0.64 (0.50, 0.82)	<.001	0.79 (0.53, 1.17)	.230	0.62 (0.50, 0.78)	<.0001	0.39 (0.28, 0.53)	<.0001	0.54 (0.38, 0.77)	<.001
Do not trust at all	0.87 (0.63, 1.20)	.391	0.62 (0.42, 0.91)	.014	0.59 (0.45, 0.77)	<.001	0.37 (0.25, 0.53)	<.0001	0.50 (0.34, 0.74)	<.001

Bold p-value<0.05 was considered statistically significant

*OR Odds ratio, CI Confidence Interval

*Adjusted for: Socio-Demographic Index (SDI), age, educational attainment, perception of home income, living area, chronic disease, mental disease, employment status, living alone or with more persons, living with kids, the perception of the importance of the preventive measures, the perception of the authorities' actions, and the perception of risk of being infected

Discussion

This study examined the association between trust in actors who provided COVID-19 information, including local health authorities and political leaders, and adherence to COVID-19 preventive behaviors across a large, international sample. Overall, higher levels of trust were consistently associated with an increased likelihood of adherence to recommended preventive measures. This finding aligns is consistent with previous research conducted during the influenza A (H1N1) outbreaks in Hong Kong and Spain, which reported that trust in government-provided information was positively associated with compliance with hand-washing and social distancing measures [19, 20]. Although these studies focus specifically on information sources, the findings are broadly aligned with our results, suggesting that trust in information providers more generally plays an important role in shaping adherence to public health recommendations.

However, our findings highlight variations in behavioral responses across different contexts and demographic groups. For instance, females demonstrated a higher overall adherence than males, consistent with previous research indicating that women are more likely to engage in preventive behaviors, particularly in contexts of low trust [21]. Age-related differences were also observed. Younger individuals were less likely to practice social distancing, whereas mask-wearing did not significantly differ by age. These results are consistent with other studies that have shown that older adults are more likely to adhere to protective behaviors [21, 22].

Interestingly, this study did not find consistent associations between adherence and factors such as medical or psychological conditions, educational attainment, household composition, or employment status after adjusting for the level of trust in health authorities and political leaders. This contrasts with studies that reported that higher education or the presence of a chronic medical condition increased the likelihood of adopting preventive behaviors [23, 24].

In our study, the country's SDI was strongly associated with adherence, suggesting that broader socio-economic conditions may be more influential than individual-level characteristics. Individuals in low- and middle-development status were generally less likely to follow protective measures. This may be influenced by broader cultural and political contexts [25, 26]. For instance, cultural orientations—such as power distance and uncertainty avoidance—mediate the effect of trust on behavioral intentions across countries, suggesting that structural and societal norms play a critical role in shaping public health responses [25]. This could also influence the different strategies adopted and endorsed across countries regarding preventive behavior [27].

Our study further revealed that trust in local health authorities had a stronger association with adherence to protective behaviors than trust in political leaders. While previous studies identified healthcare professionals and government communications as the most trusted sources of information [23, 28], our findings suggest that trust in health-specific institutions may be a more robust driver of behavioral compliance than general political trust. This distinction is critical for designing effective public health messaging and interventions.

These findings have important implications for public health policy. They underscore the need to ensure consistent messaging across sources and to adapt communication strategies for populations in diverse global contexts to support effective public health responses. In particular, involving local healthcare professionals can improve adherence to recommended measures. The lack of consistent associations between adherence and some individual-level characteristics after adjustment for trust suggests that interventions focusing solely on individual attributes may be insufficient. Instead, the strong association observed with country SDI highlights the importance of broader structural determinants in shaping adherence such as addressing contextual barriers that may limit the feasibility of preventive behaviors.

This study has several limitations. First, we conceptualize the association as primarily direct at the level of statistical modelling; however, we acknowledge that underlying behavioral pathways are likely complex and may involve unmeasured mediating mechanisms [10]. Furthermore, given the cross-sectional design, the observed association between trust levels and behavioral adherence should not be interpreted as causal. Second, response bias may be present, as participants who chose to respond could differ systematically from non-respondents [29]. Additionally, the sample mainly consisted of individuals from high-SDI countries with high education levels. These may limit its generalizability. Third, given the global scope and timeframe, we were unable to fully account for context-specific events or temporal dynamics that may have influenced trust in political and healthcare representatives or the adoption of preventive behaviors. Although we adjusted for a range of sociodemographic and perceptual variables, residual confounding due to unmeasured contextual and time-varying factors cannot be excluded.

Conclusions

Trust has an important role in fostering adherence to recommended health measures. The findings of our study reveal a positive association between trust in health and political authorities and adherence to preventive health behaviors, independent of demographics, socioeconomic factors, or perceptual factors. These results underscore

the importance of promoting trust in public institutions among the general population, particularly in preparedness for future public health crises. While further research is needed, these findings have practical implications for improving the delivery of health measures before and during pandemics. Strategies should be tailored to each population's specific needs and characteristics. Key priorities include strengthening community-based communication efforts and actively involving the public in health decision-making and policy development.

Abbreviations

CI	Confidence interval
COVID-19	Coronavirus disease 2019
iCARE	International COVID-19 Awareness and Responses Evaluation
OR	Odds ratio
SDI	Socio-Demographic Index

Supplementary Information

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Supplementary Material 1.

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Authors' contributions

All authors contributed to the preparation of this manuscript (MBC, MD, RD) MBC and RB developed the research question and study design. MBC participated in drafting and revising the manuscript. MD provided detailed comments. RB provided substantial revisions and intellectual content to the manuscript. MD analyzed the data, and MB checked its integrity and accuracy. All authors (MBC, MD, RD) read and approved the final version of the manuscript.

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Data availability

The datasets are available from the iCARE team upon reasonable request.

Declarations

Ethics approval and consent to participate

The iCARE study received ethical approval from the Research Ethics Committee of the Comité d'éthique de recherche du CIUSSS-NIM (Centre Intégré Universitaire de Santé et de Services Sociaux du Nord-de-l'Île-de-Montréal; approval number: 2020–2099/25–03–2020). All participants in the original study provided informed consent to participate prior to data collection. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and applicable institutional and national research ethics guidelines. The present study uses de-identified data from the iCARE study for secondary analysis. As no identifiable information was used, and no direct contact with participants occurred, additional informed consent for this secondary analysis was not required. No participants under the age of 16 were included in the study; hence, consent to participate was not required.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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