Understanding public response: Government communication during the COVID-19 crisis through the eyes of the Swiss public

Nicola Diviani [a,b,*], Maddalena Fiordelli [b,c], Sara Rubinelli [a,b]

[a] *Swiss Paraplegic Research, Nottwil, Switzerland*
[b] *Faculty of Health Sciences and Medicine, University of Lucerne, Lucerne, Switzerland*
[c] *Institute of Public Health, Università della Svizzera italiana, Lugano, Switzerland*

A B S T R A C T

Objective: To analyze the Swiss public perception of COVID-19 communication by the government and its impact on behavior and trust.
Methods: A cross-sectional representative online survey was conducted in January 2022 in a sample of 2587 Swiss residents.
Results: Overall the survey showed moderate satisfaction with communication, with relevance rated highly. Perceptions of communication varied across demographics. Also, differences were noted in trust in institutions, risk perception, and attitudes towards public health measures based on perceived communication quality.
Conclusion: This study highlights the dynamic nature of public health communication and underscores the significance of continuous adaptation and evaluation of strategies to effectively reach and influence diverse audiences. As misinformation persists, the study underscores the need for informative, empathetic, and honest communication, as well as tailored approaches to build public trust—an essential asset for managing health crises successfully.
Innovation: This study provides innovative concrete insights into how governmental communication could be designed more strategically to effectively communicate with the public in contexts characterized by disinformation, emphasizing the role of quality, honest, and empathetic communication in public health messaging.

1. Background

The COVID-19 pandemic highlighted the critical role of effective communication in public health crises. In such situations, government communication is essential to ensure that accurate, reliable information reaches the public, fostering compliance with recommendations and combating the spread of misinformation [1]. Misinformation during health crises has emerged as a central challenge in contemporary research, given its potential to undermine public health responses and fuel distrust [2,3]. In Switzerland, a country characterized by its rich linguistic and cultural diversity, the government's task of communicating vital COVID-19-related information has been particularly complex. Different language regions may not only have had varied access to information but also exhibited distinct responses to it, influenced by regional socio-cultural factors [4,5]. The Swiss Federal Government's multilevel communication approach thus becomes a compelling case for examining the intricacies of conveying public health messages across diverse linguistic landscapes [6]. Current research has extensively reviewed the effectiveness of COVID-19 communication efforts worldwide [7], yet it has seldom addressed the subtleties of perception across different demographic groups within a single nation, such as Switzerland. Additionally, while the link between the quality of information and public trust has been widely acknowledged [8], there is a dearth of focused studies on the interplay between the perceived quality of information, government communication assessments, and consequent public actions in the Swiss context.

Hyland-Wood and colleagues underscore the necessity for tailored government communication strategies that take into account the perils of misinformation and the heterogeneity of public understanding [9]. Their considerations and recommendations serve as a critical foundation for the development of measures to evaluate communication effectiveness, which this study aims to adopt and contextualize within the Swiss setting. The objective of the present study is to understand the dynamics of public perception regarding the Swiss government's communication

of COVID-19-related information. By scrutinizing the multifaceted relationship between information dissemination, public perception, and behavioral response, the research aims to elucidate how communication can be enhanced to serve the public good more effectively, particularly in a linguistically and culturally diverse nation.

Four hypotheses were developed to guide our investigation:

Hypothesis 1. The perceived quality of government communication content is positively associated with public trust and compliance with public health measures during the COVID-19 pandemic [9].

Hypothesis 2. Different demographic groups perceive the quality of government communication differently, which affects their level of trust and adherence to public health guidelines [4].

Hypothesis 3. The perceived appeal of government communication is positively associated with public trust and compliance with public health measures during the COVID-19 pandemic [10,11].

Hypothesis 4. The choice of communication channels impacts the perceived transparency, relevance, and trustworthiness of government messages [7].

The relevance of this research extends beyond academic interest; it offers practical insights for policymakers and public health officials. By dissecting the Swiss public's perceptions of COVID-19 communication and examining the influence of perceived information quality on government communication assessments and behavioral outcomes, this study can contribute to the optimization of public health messaging—not only in response to the current pandemic but also in preparation for future health emergencies. As misinformation continues to challenge public health efforts, understanding how to craft and deliver messages that resonate with diverse audiences and foster trust becomes ever more crucial.

2. Methods

In January 2022, we carried out a cross-sectional survey of the Swiss population, aimed at investigating their information-seeking behavior, attitudes, and beliefs about the COVID-19 pandemic, including the public health measures in place over almost two years, and their level of trust in public institutions.

2.1. Data collection and sampling

Data were collected using computer-assisted web interviewing (CAWI) by an external survey company (LINK Marketing Services AG, Lucerne). The participants were randomly selected through the LINK Internet Panel, comprising approximately 115,000 panelists, actively recruited via phone. By contacting individuals using both registered landline numbers and randomly generated mobile phone numbers, the recruitment process achieves a theoretical coverage of about 98 % of the Swiss population, excluding only individuals without their own telephone connection. The sample was stratified and quota-sampled based on sociodemographic characteristics (age, gender, language region, and education) in order to be representative of the Swiss population. The Italian-speaking linguistic region was additionally over-sampled to ensure a sufficiently high number of interviews for analysis.

2.2. Survey instrument

The questionnaire, originally developed in Italian (see Supplementary material I), underwent a rigorous translation and back-translation process for French and German to ensure precision and consistency. The design of the questions adhered to well-defined conceptual frameworks for the constructs being studied. Face validity was confirmed through a method of constant comparison, involving other researchers during the translation phase for additional verification. The finalized

language versions were pilot tested with students, with the completion time for the questionnaire averaging around 10 min.

2.2.1. Individual characteristics

We collected demographic details, including gender, year of birth, nationality, linguistic region of residence (German-, French-, and Italian-speaking), educational level, profession, and income. For analytical purposes, birth years were recoded into age brackets (18–39; 40–64; 65+), and educational levels were grouped into low, medium, and high.

2.2.2. Information-related characteristics

We measured self-rated health literacy with one item expressing the ability to look for health related information on a 5-point Likert scale ranging from 1 = "very hard" to 5 = "very easy". We also appraised participants' reliance on fifteen different information sources when it comes to COVID-19 information on a 5-point Likert scale ranging from 1 = "do not trust at all" to 5 = "trust a lot", subsequently clustering the different options into social (e.g., family and friends), digital (e.g., influencers on social media), institutional (e.g., the Federal government or the World Health Organization), and opinion makers sources (e.g., politicians or public figures).

2.2.3. Health-related characteristics

Participants indicated their general health status on a 5-points Likert scale from 1 = "very bad" to 5 = "very good", and their COVID-19 infection history ('infected' or 'not infected').

2.2.4. Perception of communication

In the evaluation of governmental communication, participants rated various attributes on a Likert scale ranging from 1 ("Not at all") to 5 ("Completely"). The attributes related to the judgement on the performance of public institutions, in addition to a grid of nine criteria derived by Hyland-Wood and colleagues [9] for evaluating the efficacy of communication: transparency, clarity, quality, relevance, honesty, consistency, sensitivity, responsiveness, and empathy.

2.2.5. Outcomes

2.2.5.1. Overall evaluation of governmental communication.
Participants were asked to evaluate the overall quality of communication by the Swiss Federal government during the pandemic. They responded to the statement, "I believe that during the pandemic, the Federal institutions communicated…" using a 5-point Likert scale, where 1 = "Not good at all" and 5 = "Very good."

2.2.5.2. Trust.
Trust fluctuations in the Federal government throughout the COVID-19 pandemic were quantified using a 5-point scale, specifically developed for this study. To capture these changes, the scale was anchored at 1 to indicate a decline in trust, 5 to signify an enhancement of trust, and a midpoint of 3 to denote no change in trust levels.

2.2.5.3. Risk perception.
Risk perception was assessed using three statements based on the Health Belief Model [12] (e.g., "COVID-19 is a severe illness") with response options ranging from 1 = "totally disagree" to 5 = "totally agree". As the three items were highly correlated were then merged into a unique average score (Cronbach's alpha = 0.871).

2.2.5.4. Beliefs and attitudes towards pandemic management.
Respondents were asked to indicate their agreement with a set of 17 statements that reflected beliefs and attitudes about COVID-19 management. Among them, 12 items focused on attitudes towards pandemic management (personal evaluations of concrete actions, e.g., "Switzerland is doing well in containing the pandemic compared to

other countries") and showed a high Cronbach's alpha of 0.870. These 12 items were thus combined into the new variable "Attitudes" by calculating their average. The remaining five items addressed beliefs about the roles and values of institutions (e.g., "It is important that institutions decide how the nation should behave"). These were found to be reliable, with a Cronbach's alpha of 0.710, provided the item "It is important always to ensure that every citizen is free to do as they please" was excluded. A new variable was created using the remaining four items.

2.2.5.5. Acceptance of public health measures. We evaluated the extent to which respondents accepted the different federal public health decisions, such as "Testing at first symptoms was recommended (March 2021)", using a 14-item matrix, presented in the chronological order they were announced throughout the pandemic, ranging from 1= "totally disagreed with the measure" to 5= "totally agreed with the measure". A reliability analysis revealed a strong inter-item correlation (Cronbach's alpha = 0.901), and these items were then consolidated into a single variable, representing the mean score of all the items to indicate overall acceptance of the public health measures.

2.2.5.6. Vaccine uptake. Vaccine uptake was quantified using a binary variable, distinguishing individuals as either "vaccinated" or "non-vaccinated".

2.3. Data analysis

Data analysis was performed using IBM SPSS Statistics 25. We used descriptive statistics to describe participants' perceptions of governmental communication through its nine attributes. Then, for all attributes of the perception of governmental communication, linear regression was employed to analyze the association with participants' characteristics as predictors (socio-demographics, information-related characteristics, and health-related characteristics), maintaining the principles of normality, collinearity, and homoscedasticity. Lastly, linear and logistic (for outcome COVID-19 vaccination) regression analyses were used to estimate the association of those evaluation attributes with the outcomes related to public health measures enacted, controlling for participants' socio-demographics, information-related characteristics, and health-related characteristics.

3. Results

3.1. Participants' characteristics

The final sample consisted of 2587 individuals. On average, participants were 49 years old (SD = 16 years). The gender distribution was nearly balanced, with males constituting 49.7 % of the sample. Most participants were Swiss nationals (95 %), with 65 % (n = 1681) living in the German-speaking part of Switzerland, 23.5 % (n = 603) in the French-speaking part, and 11.5 % (n = 300) in the Italian-speaking part. Living At the time of the survey, about 20 % of the participants had experienced a COVID-19 infection, and a substantial majority (85 %) reported being vaccinated against COVID-19. More detailed data about the participants' characteristics can be found elsewhere [13]. Besides the overrepresentation of Italian-speaking respondents, overall the sample composition reflected the demographics of the Swiss population.

3.2. Perceptions of communication

Regarding the perceptions of the communication by the Swiss government among the Swiss public, as shown in Table 1, the attribute "Relevance" obtained the highest mean score of 3.35, signifying it as the most prominently acknowledged aspect of the assessment. Conversely, "Consistency" emerged as the least positively perceived attribute, with a

Table 1
Perception of governmental communication.

Item (1 = Not at all; 5 = Completely)	Mean (SD)
Transparency	3.03 (1.13)
Clarity	3.08 (1.10)
Quality	3.33 (1.04)
Relevance	3.35 (1.02)
Honesty	3.09 (1.17)
Consistency	2.98 (1.11)
Sensitivity	3.20 (1.04)
Responsiveness	3.02 (1.05)
Empathy	3.06 (1.09)

mean score of 2.98. Other attributes, including "Quality" and "Sensitivity," scored relatively high, with mean values of 3.33 and 3.20, respectively.

3.3. Association of participants' characteristics and perception of communication

Table 2 shows the associations between participants' personal characteristics and their perceptions of information quality. Regarding socio-demographics, we observed nuanced patterns. Female participants were found, for instance, to have a slightly more negative perception of the honesty of communication compared to their male counterparts. Age also played a discernible role, with participants in the 40–64 age bracket showing significantly more positive perceptions of clarity, honesty, and consistency in communication. Those over the age of 65 were similarly inclined to view communication as more transparent, honest, and responsive. Educational levels further stratified perceptions; individuals with a medium level of education tended to rate communication as less clear, of lower quality, less consistent, less sensitive, and less responsive than those with lower educational levels. However, higher educational attainment was associated with a significantly more favorable view of the honesty of communications. Some differences emerged along linguistic lines as well, with French-speaking participants rating the honesty of communications more positively but giving lower scores for consistency. Italian speakers, conversely, rated sensitivity more positively.

With respect to information-related characteristics, increasing health literacy levels were linked to more favorable perceptions of transparency, quality, and honesty. Reliance on social sources correlated with less favorable perceptions of transparency, clarity, and honesty, whereas the use of digital sources was associated with more positive perceptions of transparency, relevance, and empathy of governmental communication. Using institutional sources of information, on the other hand, was consistently associated with positive perceptions across all evaluated criteria of communication. Similarly, reliance on opinion-makers was broadly associated with positive perceptions, with the exception of sensitivity.

Health-related characteristics also influenced perceptions; specifically, individuals who had experienced a COVID-19 infection perceived the communication by the government as less relevant.

3.4. Association of perception of communication and outcomes

Table 3 shows the associations between the perception of communication and various outcomes related to public health measures (see also Fig. 1 for a graphical representation). In terms of the overall evaluation of the communication of federal institutions, 'Quality' showed the strongest positive association, followed by 'Clarity', and 'Consistency'. 'Honesty' and 'Responsiveness' also had significant positive associations, suggesting that these attributes of communication are perceived as particularly effective.

When examining changes in trust in federal institutions, 'Honesty' demonstrated the most substantial positive relationship, implying that

Table 2
Association of perceptions of communication with participants' characteristics.

		Transparency	Clarity	Quality	Relevance	Honesty	Consistency	Sensitivity	Responsiveness	Empathy
		Adj. R2 = 0.541	Adj. R2 = 0.445	Adj. R2 = 0.569	Adj. R2 = 0.531	Adj. R2 = 0.586	Adj. R2 = 0.397	Adj. R2 = 0.465	Adj. R2 = 0.500	Adj. R2 = 0.496
		N = 2038	N = 2058	N = 2035	N = 2017	N = 2009	N = 2045	N = 2007	N = 1964	N = 2020
Predictors Socio-demographics		B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Gender	Male	1	1	1	1	1	1	1	1	1
	Female	−0.037 (0.034)	−0.018 (0.037)	−0.029 (0.031)	−0.056 (0.032)	**−0.083 (0.034)***	−0.013 (0.039)	0.007 (0.034)	0.032 (0.034)	0.053 (0.035)
Age group	18–39	1	1	1	1	1	1	1	1	1
	40–64	0.073 (0.039)	**0.157 (0.042)***	0.043 (0.035)	0.031 (0.036)	**0.122 (0.039)****	**0.131 (0.044)****	0.041 (0.039)	0.074 (0.039)	**0.080 (0.040)***
	65+	**0.161 (0.054)***	0.155 (0.058)	0.087 (0.048)	0.052 (0.050)	**0.202 (0.053)***	**0.121 (0.060)***	−0.048 (0.053)	**0.107 (0.053)***	**0.158 (0.055)****
Educational level	Low	1	1	1	1	1	1	1	1	1
	Medium	−0.073 (0.047)	**−0.101 (0.050)***	**−0.105 (0.042)***	−0.008 (0.043)	0.036 (0.046)	**−0.244 (0.053)***	**−0.138 (0.047)****	**−0.188 (0.046)***	**−0.140 (0.048)****
	High	0.008 (0.040)	−0.010 (0.043)	−0.012 (0.036)	0.057 (0.037)	**0.080 (0.040)***	−0.005 (0.046)	−0.022 (0.040)	−0.011 (0.040)	0.035 (0.041)
Linguistic region	German-speaking	1	1	1	1	1	1	1	1	1
	French-speaking	0.007 (0.042)	0.024 (0.045)	−0.028 (0.038)	−0.028 (0.039)	**0.082 (0.042)***	**−0.202 (0.048)***	0.027 (0.042)	−0.017 (0.042)	0.038 (0.043)
	Italian-speaking	0.045 (0.053)	0.025 (0.057)	−0.054 (0.048)	−0.017 (0.049)	0.072 (0.053)	**−0.228 (0.060)***	**0.128 (0.053)***	0.064 (0.052)	0.010 (0.054)
Information-related characteristics										
Health literacy		**0.048 (0.020)***	0.037 (0.022)	**0.040 (0.018)***	0.063 (0.019)**	0.052 (0.020)**	0.015 (0.023)	0.033 (0.020)	0.026 (0.020)	0.025 (0.021)
Information sources	Social	**−0.062 (0.022)****	**−0.078 (0.023)****	**−0.045 (0.019)***	−0.030 (0.020)	**−0.062 (0.021)****	−0.012 (0.024)	−0.022 (0.022)	−0.023 (0.021)	**−0.063 (0.022)****
	Digital	**0.054 (0.025)***	**0.061 (0.027)***	−0.005 (0.022)	0.016 (0.023)	0.002 (0.025)	**0.103 (0.028)***	0.029 (0.025)	0.048 (0.024)	**0.069 (0.025)****
	Institutional	**0.794 (0.027)***	**0.699 (0.028)***	**0.801 (0.024)***	**0.767 (0.025)***	**0.853 (0.026)***	**0.649 (0.030)***	0.733 (0.026)	**0.719 (0.026)***	**0.784 (0.027)***
	Opinion-makers	**0.217 (0.032)***	**0.206 (0.034)***	**0.149 (0.029)***	**0.101 (0.030)***	**0.224 (0.032)***	**0.183 (0.036)***	**0.104 (0.032)****	**0.171 (0.032)***	**0.137 (0.033)***
Health-related characteristics										
General health status		−0.034 (0.023)	0.046 (0.024)	0.009 (0.020)	0.013 (0.021)	−0.040 (0.022)	0.004 (0.026)	0.038 (0.022)	0.016 (0.022)	0.035 (0.023)
COVID-19 infection	No	1	1	1	1	1	1	1	1	1
	Yes	−0.067 (0.042)	0.009 (0.045)	−0.055 (0.038)	**−0.091 (0.039)***	−0.006 (0.042)	−0.086 (0.047)	−0.009 (0.042)	−0.058 (0.041)	−0.039 (0.043)

Notes: Estimates are from linear regression models. B = Unstandardized coefficient; SE = Standard Error. Estimates in **bold** are significant at the * $p < 0.05$; ** $p < 0.01$; $p < 0.001$ level. Information sources: Higher scores indicated higher reliance on the source. Health literacy 1 = Very difficult to find reliable COVID-19 information; 5 = Very easy to find reliable COVID-19 information; General health status: 1 = Very poor; 5 = Very good.

honest communication may be a key factor in maintaining or increasing public trust.

Risk perception was negatively associated with 'Consistency', indicating that inconsistent communication might contribute to higher perceptions of risk among the public. 'Relevance' showed a significant positive association with beliefs towards public health measures, which could mean that more relevant information leads to more supportive beliefs about public health measures. Regarding attitudes towards public health measures, 'Empathy' stood out with a strong positive association, suggesting that empathetic communication is likely to foster positive public attitudes. In the context of public health measure acceptance, 'Honesty' again proved significant, reinforcing the importance of this communication attribute.

Lastly, those who were vaccinated against COVID-19, perceived the communication by the government as more transparent but less clear.

4. Discussion and conclusion

4.1. Discussion

This study examined Swiss public perceptions of government communication during the COVID-19 pandemic, revealing a clear overall positive correlation between the perceived quality of communication and various outcomes, despite moderate public satisfaction with the communication itself. This finding highlights significant opportunities to enhance communication strategies. In the following, we will focus on the critical insights from our study, concentrating on their implications for developing more effective government communication during crises.

Firstly, our study highlights the importance of high-quality information *content* for fostering trust and adherence to guidelines, supporting Hypothesis 1. Quality, responsiveness and consistency in communication were significantly linked to higher levels of public trust

Table 3
Association of perception of communication with outcomes.

Predictors	Overall evaluation of communication of federal institutions	Change in trust in federal institutions	Risk perception	Beliefs towards public health measures	Attitudes towards public health measures	Acceptance of public health measures	COVID-19 vaccination
	Adj. $R^2 = 0.610$	Adj. $R^2 = 0.512$	Adj. $R^2 = 0.455$	Adj. $R^2 = 0.509$	Adj. $R^2 = 0.712$	Adj. $R^2 = 0.587$	Cox & Snell. $R^2 = 0.275$
	$N = 1852$	$N = 1857$	$N = 1848$	$N = 1775$	$N = 1549$	$N = 1810$	$N = 1837$
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Transparency	0.041 (0.028)	0.049 (0.027)	−0.038 (0.031)	−0.023 (0.024)	0.027 (0.019)	−0.026 (0.021)	**0.353 (0.155)** **
Clarity	**0.172 (0.024)***	**0.052 (0.024)**	0.002 (0.028)	0.007 (0.022)	0.011 (0.016)	−0.006 (0.019)	**−0.327 (0.141)**
Quality	**0.183 (0.030)***	**0.136 (0.030)***	−0.019 (0.034)	0.011 (0.027)	0.037 (0.020)	0.038 (0.023)	0.047 (0.158)
Relevance	0.003 (0.028)	−0.030 (0.027)	**0.118 (0.032)***	**0.055 (0.025)***	−0.014 (0.019)	0.016 (0.021)	−0.071 (0.148)
Honesty	**0.071 (0.027)**	**0.156 (0.027)***	**0.067 (0.031)***	0.035 (0.024)	**0.046 (0.018)**	**0.064 (0.021)**	0.206 (0.155)
Consistency	**0.116 (0.023)***	0.033 (0.022)	**−0.078 (0.026)**	**−0.059 (0.020)**	0.011 (0.015)	−0.009 (0.017)	−0.049 (0.129)
Sensitivity	0.017 (0.026)	−0.016 (0.026)	0.019 (0.030)	−0.008 (0.023)	0.015 (0.018)	0.014 (0.020)	0.238 (0.136)
Responsiveness	**0.055 (0.027)***	0.001 (0.027)	**0.093 (0.031)**	0.041 (0.024)	**0.083 (0.018)***	**0.066 (0.021)**	0.279 (0.153)
Empathy	**0.058 (0.026)***	**0.066 (0.026)**	0.012 (0.030)	**0.079 (0.023)**	**0.061 (0.017)***	0.039 (0.020)	−0.072 (0.148)

Notes: Estimates are from linear and logistic (COVID-19 vaccination) regression analyses controlling for personal characteristics. B unstandardized correlation coefficient, SE Standard Error. Estimates in bold are statistically significant at *p < 0.05; **p < 0.01; ***p < 0.001 levels.
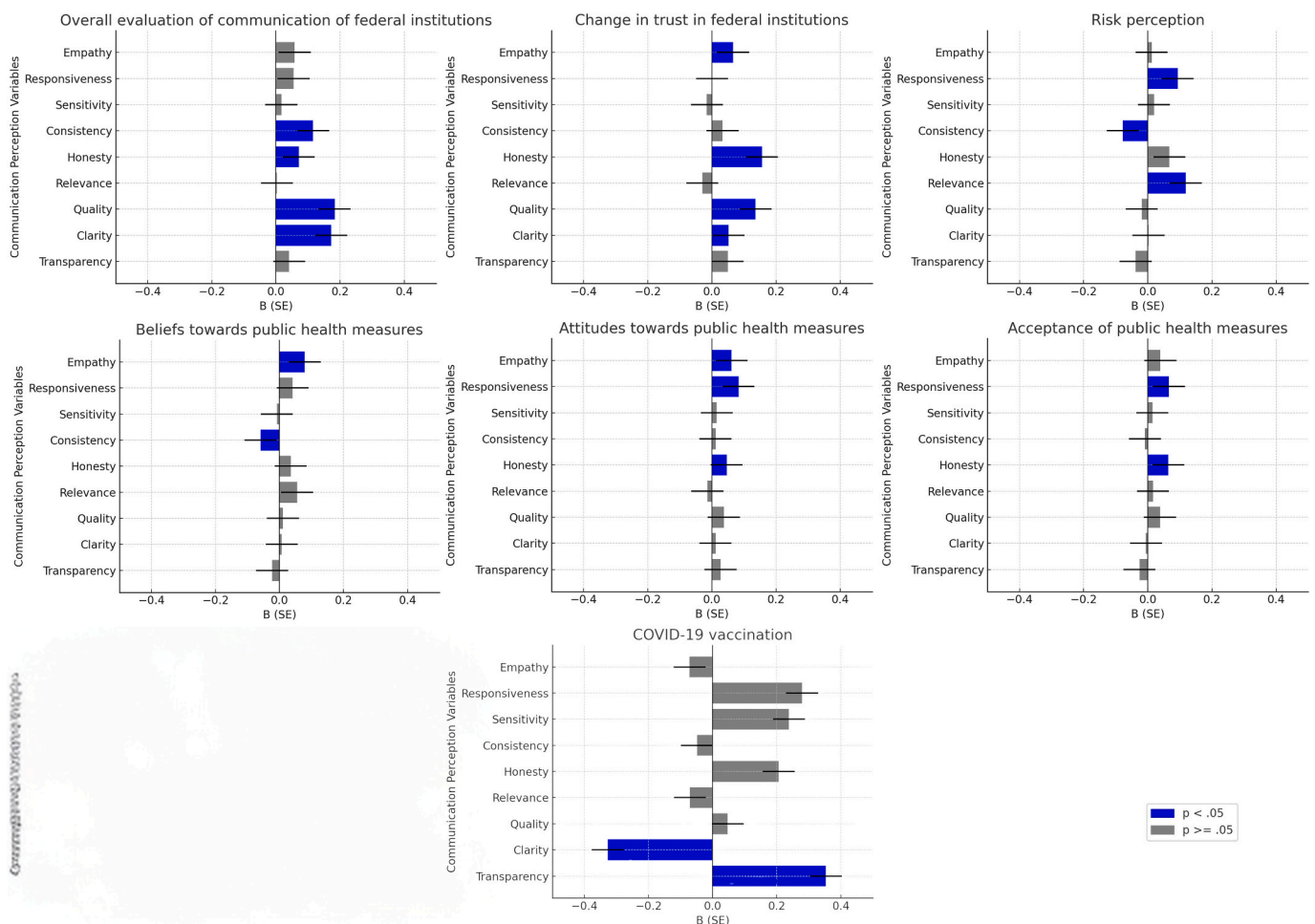

Fig. 1. Associations of communication perceptions with outcomes.

and acceptance of health measures, in line with previous research on the importance of accurate information during health crises [9]. The challenge of maintaining message consistency in a rapidly changing health crisis underscores the need for dynamic and flexible communication strategies that balance current information with coherence and reliability [14]. Concretely, this involves adopting agile strategies, combining frequent updates with transparent explanations, and collaborating with experts to ensure accuracy and consistency, thereby maintaining trust and credibility in public health messaging [15].

Secondly, *audience* consideration is crucial in public communication. We found significant differences in perceptions of communication quality across demographic groups, supporting Hypothesis 2. For instance, women and older individuals perceived communication differently from men and younger individuals, respectively. This suggests the need to explore and account for gender-specific communication preferences and develop strategies that engage younger audiences effectively. Additionally, variations in perceptions of information clarity and quality across educational groups indicate the necessity of simplifying complex messages to ensure clarity and accessibility for all [16,17]. Linguistic differences, particularly among French and Italian speakers, highlight the complexities of communication in multilingual societies, emphasizing the importance of culturally and linguistically sensitive communication [18]. Furthermore, the negative association between a personal history of COVID-19 infection and perceived relevance of communication suggests a discrepancy between personal experiences and communicated information, underscoring the need for tailored strategies that address diverse needs and experiences. Concretely, these insights underline the need for public health communicators to develop strategies that are tailored to the diverse needs, preferences, and experiences of different demographic groups, ensuring inclusivity and effectiveness [19,20].

Thirdly, our research provides insights into the effective *format* of governmental communication. In line with Hypothesis 3, attributes such as empathy, honesty, and relevance were associated with positive public responses [10,11,21]. Empathetic communication, in particular, led to more positive responses and increased public acceptance of health measures. This suggests that incorporating relatable and engaging content could contribute to increasing communication effectiveness. Honest communication was linked to heightened trust and greater acceptance of public health measures, indicating the importance of crafting genuine messages that reflect real-life experiences and concerns while ensuring transparency. Concretely, this could mean, for instance, incorporating stories and testimonials to enhance relatability and impact, fostering a deeper connection between the government and the public [22,23].

Fourthly, *channel selection* plays a critical role in governmental communication. In line with Hypothesis 4, positive assessments of communication were linked to the use of institutional sources, reaffirming the importance of official channels. However, digital platforms were also positively correlated with perceptions of transparency, relevance, and empathy, emphasizing their essential role in effective communication [24]. Our research also revealed that relying on social sources, such as family and friends, often leads to more negative evaluations across various communication aspects. Public health communicators need to combine the trustworthiness of official government information with the way people naturally share news within their social circles. This approach helps ensure that accurate health information reaches and is discussed among families, friends, and communities. Social media platforms, where official sources and personal relationships intersect, could facilitate this integrated strategy. Towards this end, governments should refine their strategies to maximize the potential of digital platforms, enhance their online presence, and ensure the provision of trustworthy health information. Combining official sources with social media can facilitate an integrated approach, accommodating evolving information consumption habits and ensuring credible health communication. Furthermore, leveraging the potential of digital media is an effective means to align governmental communication with the

recommendations outlined in the previous paragraphs regarding content, audience, and format. Digital media allows for the adaptation of communication content to cater to diverse audiences, the utilization of multimedia formats for heightened engagement, and the real-time monitoring of public sentiment and concerns [25]. By harnessing the power of digital media in conjunction with official sources, governments can establish a robust and responsive communication framework that not only disseminates accurate health information but also fosters public trust, participation, and collaboration in achieving collective health goals.

Besides these specific insights, our findings inspire general considerations for improving governmental communication. Firstly, implementing educational initiatives to improve health and scientific literacy can empower the public to understand health challenges and public health decisions, enhancing communication effectiveness [20,26,27]. This includes launching public health education campaigns, integrating health and science into school curricula (see, e.g., [28]), and organizing community workshops. Secondly, engaging the public in the conceptualization, design, and delivery of communication ensures relevance and responsiveness to audience needs. Conducting surveys, focus groups, and co-creation workshops, and using data analytics and social listening techniques can gather direct input and monitor public sentiment, ensuring that communication strategies remain aligned with public needs [29-31]. Additionally, establishing advisory committees with diverse representation from the community can offer ongoing guidance and ensure that communication strategies remain aligned with evolving public needs. By employing these strategies, governments can actively foster a more participatory and inclusive approach to communication, ultimately enhancing its effectiveness and resonance with the target audience [32]. The implications of this study and its results are particularly relevant in the context of ongoing governmental efforts to promote public health measures, even beyond COVID-19. As misinformation continues to proliferate, the need for messages that are not only informative but also empathetic, honest, and tailored to specific audiences becomes increasingly important. Such messages can help to build public trust, which is essential for the effective management of health crises.

While the study provides comprehensive insights, it has some limitations. First, the cross-sectional design limits causal inferences. Second, we assessed only the association of personal characteristics and outcomes with perceptions, not the impact of specific communication types. Third, we used single-item and newly developed indicators for some variables, which could limit the validity of our findings. Fourth, we did not apply strict multiple comparison corrections, like the Bonferroni method, due to the interrelated nature of the dependent variables, which could lead to Type II errors and obscure meaningful associations [33]. Despite these constraints, our exploratory approach identifies potential trends and associations, providing a valuable foundation for future research in public health communication. Future studies should use longitudinal and experimental methods to observe changes over time, isolate factors in communication effectiveness, and apply more stringent statistical controls. Qualitative studies could also offer a deeper understanding of the underlying reasons for the observed associations.

4.2. Conclusion

This study explored the Swiss public's perception of government communication during the COVID-19 pandemic, emphasizing the need for more effective communication strategies. It identified key insights related to communication content, audience consideration, message format, and channel selection. These insights underscore the importance of crafting messages that are not only informative but also empathetic and honest, tailored to diverse audiences, and delivered through both official and digital platforms. The differences observed across linguistic regions suggest that traditional socio-demographic determinants of health behaviors, such as gender, age, or education, might not be

sufficient for effective health communication. It is crucial to fully consider the specific context in which communication needs to be implemented. Actively involving the public in communication development is a crucial step forward. This study serves as a valuable foundation for future research and practices in public health communication, highlighting the dynamic nature of the field and the significance of continuous evaluation and adaptation to effectively reach diverse audiences in health crises and beyond.

4.3. Innovation

This paper highlights the essential role of innovation in government communication, particularly in the public health domain. The core idea is to develop and implement communication strategies that resonate globally, characterized by their high quality, honesty, and empathy. The research emphasizes that such strategies can significantly improve public adherence to health guidelines and effectively tackle the pervasive issue of misinformation.

Key recommendations for enhancing government communication include:

First, building trust with the public is paramount. This can be achieved by consistently demonstrating honesty and empathy in all communications. Second, utilizing digital platforms to tailor messages for different demographic groups ensures a wider and more effective reach. Third, actively addressing and correcting misinformation on social media platforms is crucial in maintaining the integrity and effectiveness of health communications. Fourth, equipping the public with the skills to identify credible sources of information helps in reducing the spread of misinformation. Fifth, engaging with influencers and community leaders for the co-creation of messages can amplify the reach and impact of public health communications.

These strategies, when integrated, can form a robust and resilient public health communication infrastructure. They ensure not only the widespread dissemination of messages but also their active acceptance and adherence, possibly leading to improved health behaviors and outcomes. In times of health crises, these approaches are particularly effective in enhancing public understanding and adherence to health guidelines.

Funding

Ethical approval

The study received ethical approval from the regional committee (ref. EKNZ 2020–01306). Participation was voluntary, all data were anonymized, and participants had the right to withdraw from the study at any time. Written informed consent for participation was not required for this study per the national legislation and the institutional requirements.

Declaration of generative AI in scientific writing

During the preparation of this work, the authors used ChatGPT to improve readability and language. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

CRediT authorship contribution statement

Nicola Diviani: Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Maddalena

Fiordelli: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis. **Sara Rubinelli:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Nicola Diviani reports financial support was provided by Swiss National Science Foundation. Sara Rubinelli reports financial support was provided by Swiss National Science Foundation. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pecinn.2024.100349.

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