

Information sources, trust and public health sector communication on the Covid-19 pandemic: a study on the Italian citizens' perception

Fuentes de información, confianza y comunicación del sector de la salud pública sobre la pandemia de Covid-19: un estudio en la percepción de los ciudadanos italianos

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Abstract

Introduction: In the context of infodemic disorder Covid-19 pandemic is a health emergency which also became a communication one. **Objectives:** The research purpose was to understand how Italians have informed themselves about the pandemic, which sources they have mainly used, and their assessments of public health sector communication at a national and local level. **Methodology:** The quantitative research consists of a survey conducted through telephone interviews (CATI+CAMI techniques) with a structured questionnaire to a sample of Italians in June and July 2021. **Results:** On average, watching TV, talking with friends, relatives, or acquaintances, and consulting the Internet are the leading ways of gaining information on the pandemic. Official online sources of information are the most used, followed by institutional websites which played a leading role during the pandemic: regions, the Ministry of Health, and the Presidency of the Council of Ministers. 34% of respondents claim to consult official social media pages or messaging apps of national or local authorities. **Conclusions:** In the pandemic communication, Italians recognize the crucial role of national and local authorities and online information media systems, but diverse challenges are open for the future of public health sector communication.

Keywords: pandemic communication; public health sector communication; infodemic; social media; information sources; trust; covid-19 communication.

Resumen

Introducción: En el contexto del desorden infodémico la pandemia de Covid-19 es una emergencia sanitaria que también se convirtió en una emergencia de comunicación. **Objetivos:** El propósito de la investigación era conocer cómo se han informado los italianos sobre la pandemia, qué fuentes han utilizado y sus valoraciones sobre la comunicación del sector sanitario público a nivel nacional y local. **Metodología:** La investigación cuantitativa consiste en una encuesta realizada mediante entrevistas telefónicas (técnicas CATI+CAMI) con un cuestionario estructurado a una muestra de italianos en junio y julio de 2021. **Resultados:** En promedio, ver la televisión, hablar con amigos, familiares o conocidos y consultar Internet son las principales formas de información. Las fuentes oficiales *online* son las más utilizadas, seguidas de los sitios institucionales que desempeñaron un papel destacado durante la pandemia: las regiones, el Ministerio de Sanidad y la Presidencia del Consejo. El 34% de los encuestados afirma consultar las páginas oficiales de redes sociales o las aplicaciones de mensajería de las instituciones. **Conclusiones:** En la comunicación pandémica, los italianos reconocen el papel crucial de las instituciones y de la información *online*, pero se abren diversos retos para el futuro de la comunicación del sector de la salud pública.

Palabras clave: comunicación pandémica; comunicación del sector de la salud pública; infodemia; redes sociales; fuentes de información; confianza; comunicación covid-19.

Introduction

The Covid-19 pandemic is a health emergency but also a "communication emergency", in a context typified by the risk of disinformation and an increasing infodemic disorder. Communication is a strategic tool that public health sector institutions must use to address a critical situation from different points of view. In particular, during the pandemic, institutions accelerated the use of digital media to communicate with citizens.

In this article, we will illustrate a national survey conducted in 2021 in Italy, among the first European countries to be hard hit by the Covid-19 pandemic. The study aims to detect both how Italians seek pandemic information and their opinion on public sector communication, within the theoretical framework we deal with in this introduction.

Information seeking during the Covid-19 pandemic and the infodemic disorder: ethics, trust, and credibility of sources

At the Munich Security Conference on 15 February 2020, the WHO Director-General, Tedros Adhanom Ghebreyesus, defined as infodemic the worldwide information crisis that emerged from the Covid-19 pandemic. The use of the term infodemic emphasizes the overabundance of Covid-19-related information circulating in the media ecosystem, which has two consequences: on the one hand, the selection of relevant information is problematic and, as a result, complicated for the general public to find the right answers to its questions - which can lead to their settling for the first information encountered, driven by selection bias (Prior, 2005); on the other hand, the amount of information produced, together with its rapid circulation - often through social media and private chat channels - makes it more tricky to distinguish between reliable and unreliable sources, increasing the risk of "pollution" of the overall information quality and of coming across false or misleading information (OECD 2020; Catalán-Matamoros, 2020). All the more so in a context such as that of a pandemic emergency in which the need for information is associated with emotional tension and a lack of knowledge on the topic.

Moreover, infodemics are part of a more general context: a crisis involving the legitimacy of the institutions, which is accompanied by a crisis calling into question the authority of public communication, and the emergence of a condition of information disorder (Wardle & Derakhshan, 2017). This condition has alerted us to the risks of media manipulation of citizens' attitudes, which are accentuated by the increasingly immediate possibilities of organising and disseminating information content, and which are

reinforced and accelerated by the dynamics of social media and digital spaces.

The institutional definition of infodemics is found in the World Health Organization's Situation Report No. 45 of 5 March 2020, which highlights the more general risk of information pollution during a health emergency, underlining how «infodemics can spread misinformation, disinformation and rumours during a health emergency» and explaining how «during emergencies demand for information is high, there are often many unknowns and people will seek information from sources and individuals and entities they trust».

The question of trust, therefore, seems to be central, both concerning the need to find information and the credibility of the information itself: reliable information sources and authentic information content seem therefore to be fundamental to the process of correct information, so much so that in the WHO document, trust is seen as a corrective element of information disorder. A long-standing trend of low trust in the news is confirmed getting into the Italian perspective. And it appears to be mainly related to the partisanship of Italian journalism and the overwhelming influence of political interests on news brands. A lower level of political partisanship in Italy corresponds to much trust, usually (Reteurs Institute 2020). In this regard, the Trust Edelman Barometer in Italy shows that trust in the media as information sources (search engines, traditional media, owned media and social media) has declined, reaching near-historic lows in 2020-2021. Concurrently, trust in institutions has improved since 2018, with a significant increase in the pandemic period, from 47% in 2006 to 66% in 2021.

This infocentric approach (Colombo, 2022) assumes that the quality of information is sought according to a principle of rationality and that it can produce objective results; it also assumes that the bonds of trust are always positive in the sharing of reliable content. On the other hand, the case of infodemics shows us first that the quality of information is also a subjective matter and that it depends on the perception of what is to be considered reliable based on one's convictions and emotional sensibilities. It also shows us that the attribution of trust in information sources follows criteria of selectivity that today involve non-institutional actors, anonymous subjects, homophilic content production channels and algorithms that personalise search results. Moreover, it shows how the current media system, which is hybrid (Chadwick, 2013) and convergent (Jenkins, 2006), creates an information circuit capable of amplifying the circulation of content in ways that are ever-swifter and that tend to elude centralised control.

In this sense, it is important to analyse the level of

public trust in the media and other institutional and non-institutional actors to understand how, during Covid-19, the credibility level of information sources acted, or failed to act, to curb “infodemic disorder”.

Indeed, in light of these, the European Union adopted a joint communication to tackle Covid-19 disinformation among all European institutions (EU JOIN(2020)8). Also, platforms have taken relevant steps reinforcing their efforts to tackle disinformation and misinformation during the pandemic collaborating with national and international health organisations, publishing a joint statement (OECD, 2020).

Public sector pandemic communication: Internet and social media use

Public health organizations and institutions, at international, national, and local levels, play a crucial role in “pandemic communication” (OECD, 2021). Pandemic communication results from combining specific approaches from risk communication to crisis and emergency communication (Coombs, 2020; Heath & O’Hair, 2009; Lovari, Ducci & Righetti, 2021), and the various phases of the pandemic need to be continuously communicated in a planned, diverse and coordinated way: from its outbreak to its full development, through to its decline when the pandemic tends to turn into an endemic (Leiss, 1996; Freimuth, Linnan & Potter, 2000; Sandman, 2002; Covello, 2009; Coombs, 2019).

From a general perspective, public health organizations and institutions should set appropriate pandemic communication targets for themselves. We can trace them to the following areas of intervention (Lovari et al., 2021: 254): “to inform lay persons about a new infectious disease, raising awareness about potential consequences; to communicate correct behaviours and preventive measures to be adopted for limiting the spread of the virus;” to inform about and to facilitate access to health services created for the pandemic; “to maintain or reinforce citizens’ trust in order to reduce fear-driven responses in the face of uncertainty; to inform mass media about governments’ policies to reduce the impact of the pandemic at health, economic and social levels; to fight disinformation that can be harmful to the general population and create panic” (PAHO, 2010; WHO, 2020).

Furthermore, according to Coombs (2020) Covid-19 has created some specific communication demands for public sector crisis managers that have implications for future pandemic crisis communication. He highlighted some of the most difficult challenges for public sector organisations, inviting public health crisis communicators to remember the roles of anxiety, empathy, and fatigue in their message development during the pandemic.

During the crisis response, communicators need to reinforce the efficacy and use message mapping to guide the development of risk-related messages, because the public health threat is salient during the pandemic.

Trust appears to be pivotal in all this. The concern for consistent inter-institutional pandemic communication helps to strengthen citizens’ trust in institutions; and, simultaneously, trust seems to be linked to the credibility of institutions which is defined through the ability to adopt effective pandemic public policies. This credibility influences the effectiveness of the institutions’ communication during a very difficult time.

According to studies conducted in 2020, on the one hand, the pandemic increased distrust in some national contexts, while, on the other, it laid the foundation – in ways that would vary during the different stages of the pandemic – for the restoration of trust in specific public health organizations and authorities (Edelman, 2020; Lovari, D’Ambrosi & Bowen, 2020; Nielsen et al., 2020; Pew Research Center, 2020), such as hospitals or local authorities (see Belardinelli & Gili, 2020)

To achieve the targets and face these challenges, public health sector organizations need to adopt innovative and distinct communication strategies based on the characteristics of the different audiences (patients, citizens, journalists, stakeholders, etc.) (ibidem; Lovari, Ducci & Righetti, 2021). In this sense, in addition to the use of traditional media which is still very relevant, one need only think of widespread TV consumption in several countries including Italy, scholars have highlighted how the use of the Internet and social media represents an essential communicative choice in the management of health crises and emergencies (Lovari & Bowen, 2019; Villegas-Tripiana, Villalba-Diaz & López-Villegas, 2020), and the Covid-19 pandemic has further strengthened this view (Coombs, 2020).

The Internet and social media have profoundly transformed the contemporary, hybrid and convergent media ecosystem (Jenkins et al., 2013) and have influenced the way citizens and institutions relate to each other (Bertot, Jaeger & Grimes, 2010; Canel & Luoma-aho, 2019; Zavattaro & Sementelli, 2014). So, in the event of a pandemic, it is particularly helpful for public sector organizations to have the opportunity to communicate directly with citizens, thanks to a disintermediation process (with which they bypass the mainstream media system) listening, informing but also dialoguing, reaching large numbers of people quickly, targeting different audiences by distinguishing channels and messages, and monitoring their impact.

Simultaneously, in the Health 2.0 and Medicine 2.0 context (Eysenbach, 2009; Van de Belt et al., 2010), social

media enable citizens not only to consult more sources and acquire more information but also to develop and share health information and experiences (Andersen et al., 2012; Parrot, 2009; Kim & Lee, 2014), especially during a pandemic (Guidry et al., 2017; Liu & Kim, 2011; Sastry & Lovari, 2017). For public sector organizations, this is not a risk-free option (e.g.: platform logic's influence and challenging 'management' of hetero-produced communication) and neither is it for citizens themselves (e.g.: information overload, misinformation) (Ducci & Lovari, 2021).

It is also essential to emphasise the need always to adopt a multi-channel approach that ensures inclusiveness in public health communication, reducing the risk of inequalities linked to citizens' different capabilities in accessing and using the Internet and social media.

The Italian context: the role of public institutions in communicating the pandemic (government, local authorities, local health authorities and hospitals)

Let us now examine the Italian context to which our study refers. The Italian health system is strongly decentralized at a regional level. Consequently, there are many differences in the management and provision of health services to the population at a local level, with correspondingly different levels of speed and responsiveness. These diversities are also mirrored in public health sector communication to citizens.

However, the pandemic entailed the centralization of government decisions on how to deal with the health emergency. Therefore, a significant role in pandemic communication was played by the national government institutions (Presidency of the Council of Ministers, Ministry of Health, Civil Protection and National Institute of Health). Equally, the care services and the implementation of measures at a local level were coordinated by the regions, which 'guided' municipalities, hospitals, and local health authorities (henceforth ASL, using the Italian acronym which means Azienda Sanitaria Locale), which are the public sector organisations entrusted with the concrete management of health services locally (here, we point out that the organisation of the regional health system into ASL and hospitals differs from region to region).

It should be borne in mind that all public sector communication in Italy is ruled by national legislation that also affects the way communication is organised and managed in the public sphere. Particularly, all public administrations are equipped with communication and citizen information structures which have an institutional nature, based on the Framework Law No. 150/2000. Unfortunately, the application of the law is yet patchy, so the development of the communication area in the

various regions and local health authorities cannot be considered homogeneous throughout the country. This situation has led to some differences in the management of pandemic communication at the local level, both by regions, municipalities, ASLs and hospitals.

Lastly, since 2010 the use of the internet and social media has gradually expanded in the Italian public sector system (Ducci, Materassi & Solito, 2020). Furthermore, the Istituto Negri Survey (Fronte, 2022) shows that during the pandemic we witnessed an acceleration in the use of messaging platforms and apps by national and local institutions which dealt with the emergency, as well as ASLs and hospitals. In this respect, too, however, approaches and levels of development or maturity are disparate (Solito & Materassi, 2021). For instance, in addition to successful experiences, which exemplify an advanced culture of public sector communication, there are cases of 'improvisation' that reveal a certain lack of professionalism, backwardness and reduced skills (Ducci & Lovari, 2021). Therefore, the presence of public health sector organizations on social media (understood as opening and managing an institutional public account, or page) presents a varied scenario, both quantitatively (number of platforms and messaging apps used) and qualitatively (communicative approaches adopted to generate, share content and foster engagement) (Lovari, Ducci & Righetti, 2021).

Purpose and research questions

A year and a half after the start of the Covid-19 emergency, the overall purpose of the research was to understand how Italians have informed themselves about the pandemic, which sources they have mainly used and continue to use (with particular attention to institutional sources), and their assessments of institutional communication concerning various aspects of the pandemic on the part of those public sector organisations which deal with health at national and local levels.

Specifically, the research questions are the following:

RQ1 - How do Italians get information about the pandemic in an infodemic context? (sources and most used communication channels, and the role of the Internet and social media)

RQ2 - What is the level of public trust in the organisations selected as sources of information on the pandemic?

RQ3 - How do Italians perceive communication by health institutions on the different aspects of the pandemic? (Level of satisfaction)

RQ4 - What is the public opinion of how local public sector organizations use different media to communicate about the pandemic (particularly, regions, local health authorities and hospitals)?

Methodology

The quantitative research consists of a survey conducted through telephone interviews, with a structured questionnaire, to a sample of Italian citizens in June and July 2021. The survey was based on a combination of the techniques of CATI (Computer-Assisted Telephone Interviewing) and CAMI (Computer-Assisted Mobile Interviewing). The target population was Italian residents who, at the time of contact, had reached the legal age of 18 - (50,208,000 units of which 24,195,000 males and 26,013,000 females: ISTAT data as of 01/01/2021 rounded to the nearest thousand). A standard sample size of approximately 1,000 units (1001 to be accurate) was chosen for the selected sample, according to the sector's praxis (Kish, 1995; Mecatti, 2010). This sample was obtained by stratification of the general population using gender, age (in brackets) and geographical area of residence (ISTAT geographical macro-areas) as variables (2019)¹.

Consistent with the purposes of the survey, the questionnaire was drawn up by considering the topics covered by the research questions and consists of 20 closed-ended questions. In the data processing phase, the statistics produced refer to cases with an overall re-weighting of them so as to reconstruct a picture - limited to the variables used for stratification - as close as possible in terms of composition to the entire national context.

Because of the assumed general perspective (national sample), the study of the population also includes comparative analyses between the different sub-populations ascribable to the context variables surveyed. With a uniquely "bivariate" approach, the item response structures (patterns) were compared with the available variables: age (in brackets), sex, level of education and geographical affiliation (territorial macro-areas), all of which were considered likely to lead to differing attitudes.

Specifically, for comparisons and consequent significance test, Cramer's coefficient V was determined for sex and geographical affiliation variables, while for the remaining age brackets, level of education and the other ordinal variables, Somers' coefficient d was used, which also provided the concordance and, respectively, the discordance between the growth of the attributes related to the analysed variables.

Regarding the composition of the Italian population sample (1001 units), it is composed of: 51.7% female

¹ As stated by ISTAT (2019), the Italian geographical areas are divided into North-West (regions: Liguria, Lombardy, Piedmont, Valle d'Aosta), North-East (regions: Emilia-Romagna, Friuli-Venezia Giulia, Trentino-Alto Adige/Autonomous Provinces of Trento and Bolzano, Veneto), Centre (regions: Lazio, Marche, Tuscany and Umbria), South (regions: Abruzzo, Basilicata, Calabria, Campania, Molise, Apulia) and Islands (Sardinia, Sicily). Directions available from: <https://www.istat.it/it/files/2013/11/2019.28.06-Descrizione-dei-dati.pdf>

respondents and 48.3% male respondents, according to five age classes represented as follows: 18-29 (14.5%), 30-44 (22.8%), 45-54 (13.3%), 55-64 (22.4%), 65+ (27.2%).

Moreover, 26.6% of the respondents reside in the North-West, 20.1% in the Centre, 19.2% in the North-East, 17.1% and 17.0%, respectively, reside in the South and the Islands. In terms of education, 55.8% of the sample have a high school diploma, 17.9% have an elementary or middle school certificate or no certificate at all; 25.2% of the respondents have a university degree and 1.1% have a post-graduate degree (master or doctorate).

According to the theoretical background on public health sector communication and the recent literature regarding the pandemic and health emergency communication (Lovari, Ducci & Righetti, 2021), we identified the following topic categories: scientific discoveries; epidemiological and sanitary data (spread of the pandemic and level of vaccination); national and local regulations adopted to deal with the pandemic; communication to counter fake news; health services activated for Covid-19; health protective behaviours; vaccine administration methods; enabled services to deal with crises that occurred or worsened with the pandemic (i.e., domestic violence; mental health); well-being advice during quarantines and lockdowns (citizen empowerment); reduction or suspension of other health services due to the emergency (Ducci, 2021). To answer the RQ3 the survey has been constructed considering the above-mentioned categories.

It should be borne in mind that the research results refer to a sample of Italians and show some trends detectable in the Italian population. They are not extendable to other national contexts, but they may represent a starting point for elaborating research hypotheses useful in future comparative surveys.

Results

The survey results appear below, following the order of the research questions. Firstly, for each topic, we outlined the main trends through average results, and then, gradually, we delved into specific variables (age, gender, educational level, and geographical area) only in cases where statistical significance emerged.

Ways of gaining information about the pandemic by the Italian population

In the pre-pandemic period, the studies on Italians' media diet have shown the maintenance of a very high consumption of TV, an increase in the use of mobile phones, of the internet and social media to search for information (Censis, 2017). Interestingly, the increase concerned the health and well-being information seeking (Censis, 2014;

Osservatorio News Italia, 2014). During the two years of pandemic (2020-2021) an acceleration in the use of the internet and social media for health information occurred (Censis, 2021) with percentage growing from 60 to 73% (Fronte, 2022). Starting from these assumptions, we explored how Italians had informed themselves about the Covid-19 pandemic by submitting hypothetical practices, based on previous literature on the topic (Osservatorio News Italia, 2020; Pew Research Center, 2020).

As other studies have highlighted (i.e.: Osservatorio News Italia, 2020), on average a considerable portion of Italians in our sample state that they are informed about the pandemic “moderately” or “a lot” by “following TV (newscasts, talk shows and dedicated programmes”. In the second place we find “talking directly to friends, relatives and acquaintances” and in the third 'consulting the Internet' (excluding social media) i.e., Google, online newspapers, websites, etc.

Slightly less than 50% of the sample stated that they inform themselves ("moderately" or "a lot") by talking to people working in the public health sector (health workers, nurses, administrators, pharmacists), as well as to their referral medical doctor (general practitioner, paediatrician, or specialist doctor).

The least-used means are reading printed newspapers,

social media and, above all, listening to the radio, which comes last.

The age variable seems significant in this general trend. We should bear in mind that TV usage increases linearly with age and the two extreme age brackets (under29 years and 65+ years) show some significant deviations (see Fig. 1). To gain pandemic information, the over-65s are the major TV users (moderately + a lot = 92.0%) and the least inclined to turn to the Internet (35.2%). Quite the opposite for the under30s, for whom the Internet is the first way of gaining information (87.6%) and social media the fourth (59.0%), coming just after “TV” and “talking with friends/relatives/acquaintances” and as popular as “talking to health professionals (58.6%)”.

Browsing the Internet, social media, printed newspapers and listening to the radio increase with the level of education. Conversely, the higher the level of education, the fewer people turn to their referral medical doctor to find out about the pandemic (from 50.0% to 36.9% of graduates). In terms of geographical area, there is a significant gap in the use of printed newspapers - between the North-East and the South of the country (50.0% North-East; 28.9% South) - and in the use of social media which appears markedly lower in the North than in the rest of Italy (North-East: 28.2%; North-West 29.1%; Centre 42.2%, South 46.0%; Islands 39.7%).

Table 1. Decreasing ranking of how respondents inform themselves about the Covid-19 pandemic - sum of 'moderately' and 'a lot' response options, in percentages (n=1001).

	% moderately + a lot
Watching TV (news, talk shows, broadcasts)	85.5
Talking with friends / relatives / acquaintances	71.1
Consulting the Internet (Google, <i>online</i> newspapers, websites)	61.6
Speaking with healthcare personnel (nurse, administrative, pharmacist)	47,8
Speaking with the referral medical doctor	44.4
Reading printed newspaper	38.7
On social media (Facebook, Instagram, Whatsapp, etc.)	36.3
Listening the radio	34.2
Others	0.2

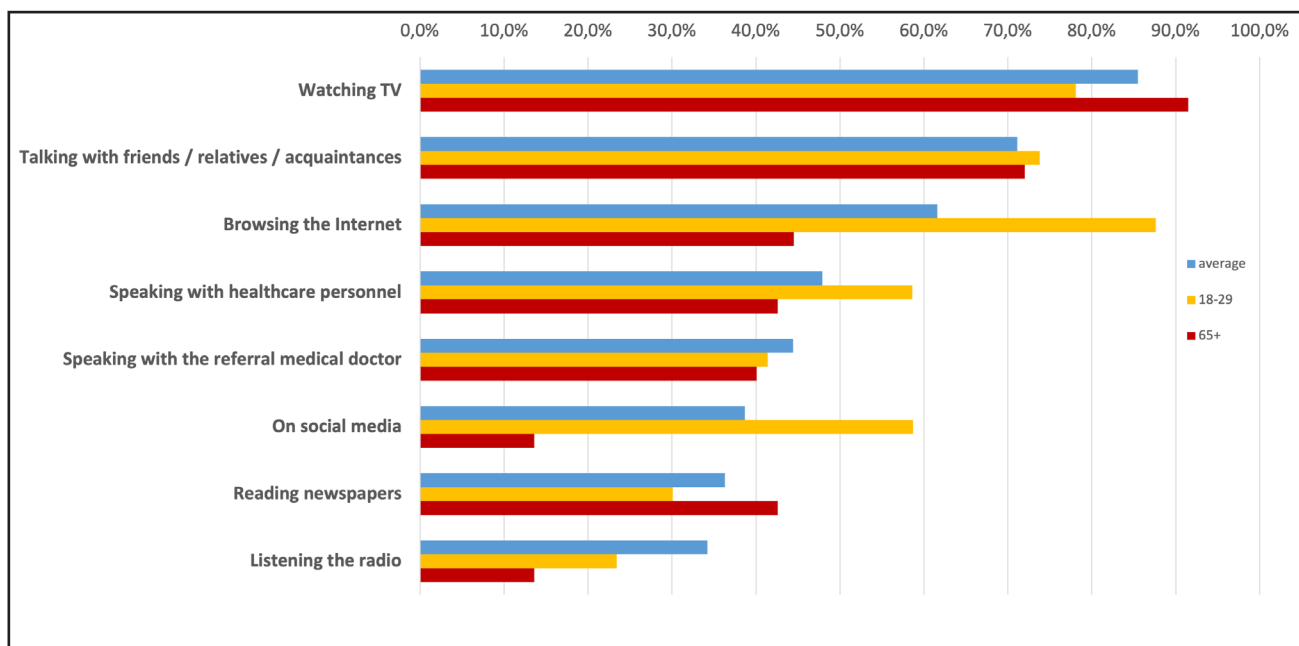


Figure 1. Ranking of how people are informed about the Covid-19 pandemic – sum of 'moderately' and 'a lot' response options, in percentages (n=1001). Average values, age groups 18-29 years old and 65 years and over.

Focus on browsing websites and social media

We looked in detail at online consultation and the browsing of websites and social media institutional pages, besides specific professionals' accounts (journalists, influencers, experts), with a focus on a reduced sub-sample of the survey (n= 798) corresponding to the number of avowed internet users.

As shown in Fig. 2, official online sources of information (newspapers and news agency websites etc.) are the most used, closely followed by those institutional websites which played a leading role during the pandemic. First and foremost, among these are the regions, then national institutions such as the Ministry of Health and/or its related bodies, (Presidency of Council of Ministers and/or Civil Protection, and World Health Organisation and European Union websites).

On the other hand, slightly less than 50% consulted local institution websites such as the municipality, ASLs or hospitals. Social media accounts of experts, followed by journalists and influencers, are scantily used sources of information on the pandemic.

34% of respondents claim to consult the social media pages or messaging apps of national or local authorities.

As the following table shows, while the social media pages of the Presidency of the Council of Ministers (and/or Civil Protection), Ministry of Health, regions and municipalities have been used to gain information in equal measure, the use of local health authorities or hospitals' social media is decidedly lower:

Generally speaking, the predominant use of Facebook and, in second place, Instagram is evident. Results appear to be influenced by two different factors: on the one hand, by the diversity of communication choices that every institution opted for and, on the other, by the users' preferences. Whereas most public organisations officially launched themselves on Facebook a long time ago, it is not the same for other social media and messaging apps.

For instance, most municipalities and all Italian regions turned to Instagram, despite all the local health authorities or hospitals and some national institutions. Moreover, not all institutions use Whatsapp and Telegram to provide information and interact with citizens. The Presidency of the Council of Ministers, for instance, did not activate Whatsapp or Telegram, while the technical government bodies (Civil Protection, local offices) did, and the Ministry of Health appears to have opened Telegram during the pandemic.

Here, we consider the two most used platforms - Facebook and Instagram – by public sector organisations and age bracket differences (see Fig. 3).

In the case of Facebook, we generally note that local authorities' pages (such as municipalities, regions, ASLs or hospitals) are more frequently browsed than national ones (Ministry of Health/Aifa/Iss and Presidency of the Council of Ministers). On the contrary, national public organisations' institutional pages appear to be consulted much more on Instagram (also due to a lower incidence of

local administrations and ASL/hospitals on the platform). Italians between 30 and 44 years old are the most frequent users of institutional Facebook pages, while 65-year-olds and older people are the least frequent users. Under30s are the most frequent users of all institutional Instagram pages, except for municipal pages, for which the 30–44-year-old bracket holds the record.

Moreover, consultation of institutional Facebook and Instagram pages generally increases with higher educational qualifications.

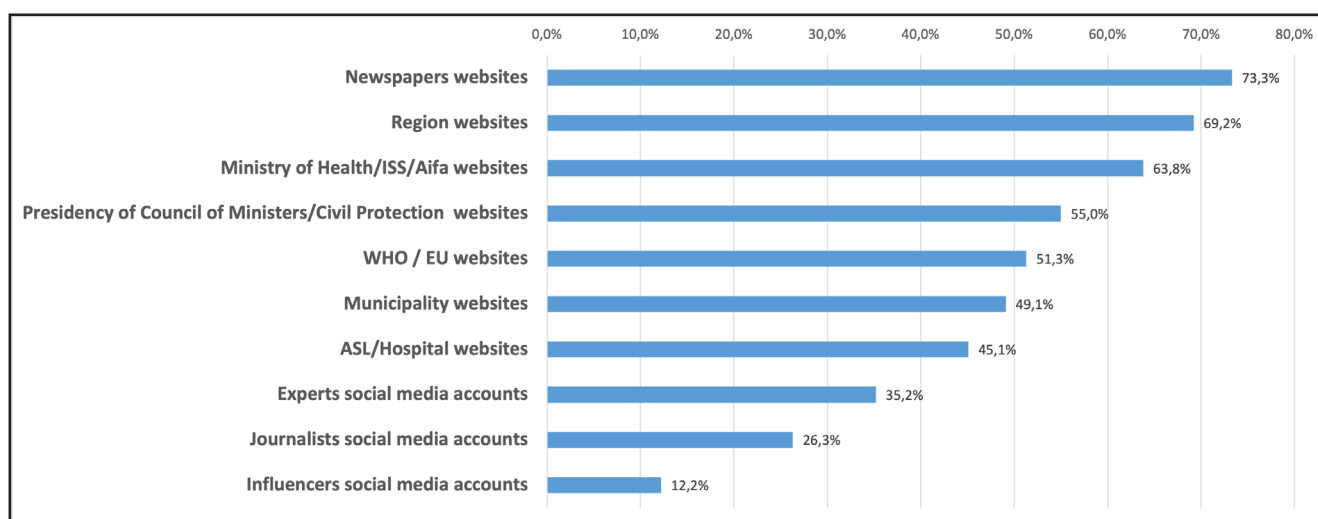
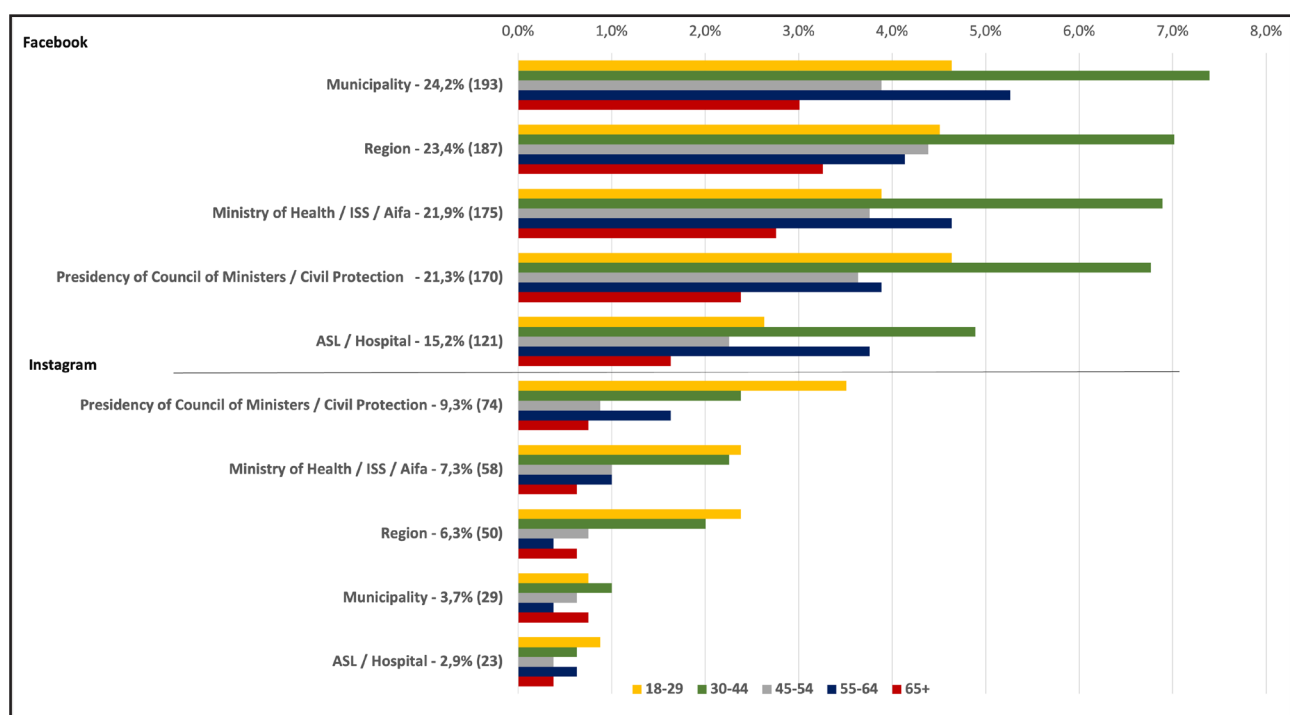


Figure 2. Ranking of institutional websites and social media accounts of experts, journalists, and influencers used to gain information about the pandemic in the last year – sum of 'moderately' and 'a lot' response options, in percentages (n=798).

Table 2. Use of institutional social media pages or institutional chat (varying number). Percentage values of total choices expressed for each item – sum of “moderately” and “a lot” response options, in percentages (n=798).

	Facebook	Instagram	Linkedin	Telegram	Twitter	Whatsapp	Youtube	Others
Presidency of Council of Ministers/ Civil Protection (n.247)*	44.6	19.4	5.0	3.7	6.6	12.3	7.9	0.5
Ministry of Health/ National Institute of Health (ISS), Italian Medicine Agency (Aifa) (232)	55.4	18.4	2.8	5.4	3.5	7.9	6.0	0.6
Regions (241)	61.7	16.5	1.7	2.6	3.3	7.3	5.9	1.0
Municipality (242)	67.3	10.1	1.0	3.1	1.4	11.5	4.9	0.7
ASL/ Hospital (150)	65.0	12.4	2.7	2.7	2.7	9.1	3.8	1.6

* In brackets the actual number of respondents who expressed at least one choice among those presented.

**Figure 3.** Ranking by consultation percentage of Italian institutions' public pages on Facebook and Instagram. Data by age brackets (n=798).

Trust in institutions as pandemic information sources

Turning back to the general sample (n= 1000), interviewees expressed their trust in international, national, and regional institutions which dealt with the emergency. The greatest trust is accorded the Ministry of Health and the referral medical doctor; then come official information sources such as news agencies or newspapers and, whether “moderately” or “a lot”, trust is also expressed in healthcare personnel, municipalities, and experts.

On the other hand, the interviewees seem to place less trust (with percentages of “moderately + a lot” replies below 50%) in individual journalists and, above all, friends/relatives/acquaintances, and influencers. The last category is by far the least trusted source. (see table 3).

As Figure 4 shows, for all items, the expression of trust tends to decrease with ageing (except for 'friends/relatives/

acquaintances') - with the polarisation of the two extreme age brackets (under 30 and 65+) - while it increases with the level of education (excluding referral medical doctor, influencer, and friends/relatives/acquaintances).

Therefore, the younger and more highly educated people are the ones who tend to place greater trust in institutions or actors.

Indeed, to a far greater extent, the under30s express trust in public institutions, especially the Ministry of Health or its related bodies, the WHO, and ASL/hospital, with “moderately + a lot” answers close to 90%. Then, official sources of information (news agencies, newspapers, etc.) are considered more trustworthy than the sample average, as are experts (epidemiologists, virologists, etc.) and the Presidency of the Council of Ministers.

Nevertheless, the trust trend of the over-65s is always below the sample average for all the items.

Table 3. Trust in how actors and institutions inform about the pandemic. Sum of 'moderately' and 'a lot' response options, in percentages (n=1001).

	% moderately + a lot
Ministry of Health/ISS/Aifa	76.9
Referral medical doctor	74.7
Presidency of Council of Ministers/ Civil Protections	73.4
World Health Organization/ European Union	72.9
Official information sources (news agencies, newspapers, etc.)	72.8
ASL/Hospitals	72.4
Region	69.5
Healthcare personnel	66.4
Municipality	65.3
Experts (Epidemiologists, virologists, etc.)	65.1
Friends/relatives/acquaintances	46.3
Journalists	30.5
Influencers	9.2

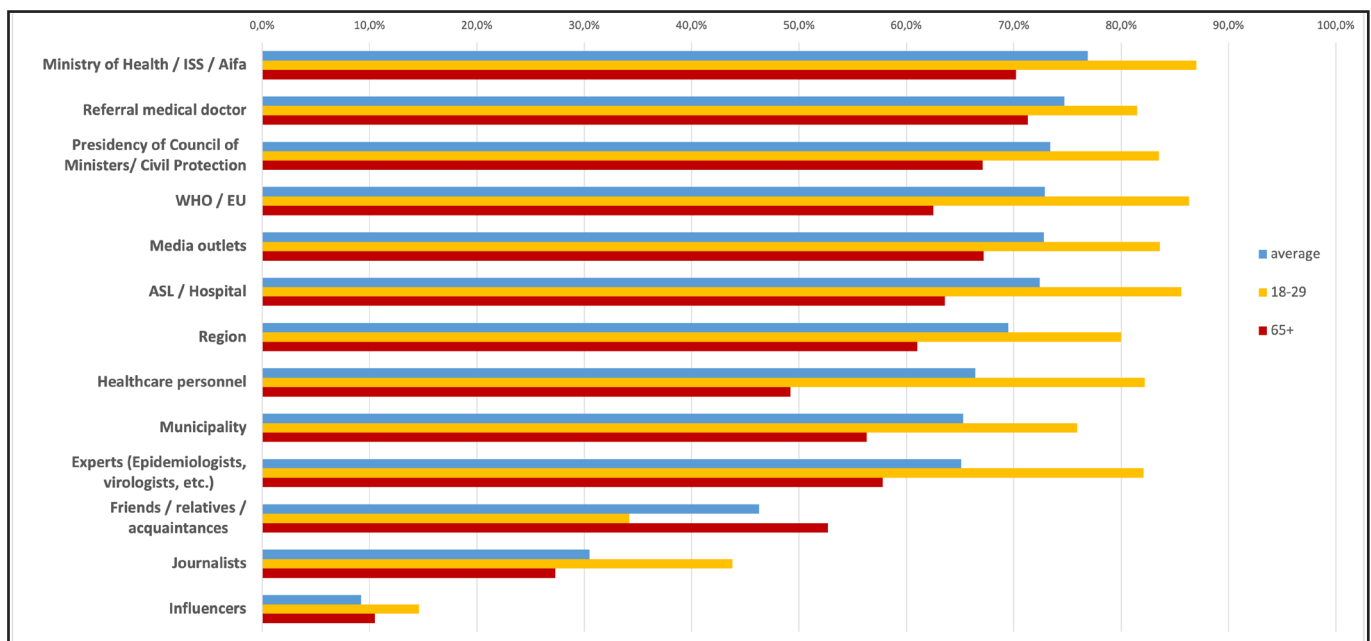


Figure 4. Ranking of information sources on the pandemic, according to the trust expressed on average, and by age groups "18-29 years" and "65 years and over" - sum of "moderately" and "a lot" response options, in percentages (n=1001).

The perception of public health sector communication on different aspects of the pandemic

Consistent with the third research question, we surveyed the respondents' views on public health sector communication about the main aspects of Covid-19. We identified the issues addressed by employing the topic categories already listed in the methodology section above.

The ranking presented below (tab. 4) summarises the "moderate" or "a lot" satisfaction of interviewees with the various types of public health sector communication related to Covid-19. It should be noted, based on a careful assessment of the researchers, that in certain circumstances public health institutions were not subject to the sample's opinion (table 4).

Overall satisfaction was recorded except for two aspects: health services suspended due to the pandemic crisis and fake news.

In particular, the interviewees value public sector communication on preventive behaviours aimed at reducing contagion (using a mask, washing hands, or using disinfectants, physical distancing). Almost equally, they appreciate how vaccines were communicated (methods, timing, etc.).

Communication on services started for Covid-19 (guidelines on what to do in the event of symptoms, free telephone number, etc.) also achieved a considerable degree of satisfaction, as did communication on the rules adopted to deal with the emergency.

To a lesser extent, but still significant, we find the communication of data on virus spread, although with a difference of approval rating: the government's

communication was far less appreciated than the regions'. In addition, 83.7% of respondents believe that the updating of online data by the regional authority is "moderately" or "a lot" relevant, an opinion that increases with the level of education.

Wellness advice, such as exercising at home or eating healthily, aimed at maintaining a certain quality of psycho-physical well-being in lockdowns and quarantines, followed the ranking. Then comes communication on scientific aspects of the pandemic (discovery of virus characteristics) and, lastly, the one dedicated to services enabled specifically for Covid-19 related crises (i.e., mental health, domestic violence against women and children).

At this point, we asked the interviewees to express their opinion on four public health institutions that covered the mentioned topics, which fall under the narrower umbrella of health emergency communication. The interviewees expressed the most satisfaction with the Ministry of Health, then with the Regions, followed by ASL/hospitals and the referral medical doctor.

From this tendency, a higher appreciation for the communication of local authorities and organisations (regions and ASL/hospital) was expressed among citizens in the North-East, while a lower preference was recorded by the Islands respondents.

Finally, we want to highlight that satisfaction with communication received from the referral medical doctor decreases as the education increases up to a degree level. It is worth noting that the same trend applies to the "talking to the doctor" modality of information on the pandemic (see section 3.1).

Table 4. Descending rank of satisfaction related to different types of communication by the public sector organizations - sum of “moderately” and “a lot” response options, in percentages (n=1001) (missing data=data deliberately not collected).

Topic categories of pandemic communication	Ministry of Health	Region	ASL/ Hospital	Referral medical doctor	All institutions
Health protective behaviours	89.4	81.9	75.3	69.4	-
Vaccine administration methods	80.9	77.8	71.9	65.4	-
Health services for Covid-19	79.1	72.2	66.1	64.9	-
Regulations adopted to deal with the pandemic (national and local)	-	-	-	-	74.2
Epidemiological and sanitary data (spread of the pandemic/level of vaccination)	50.0	72.5	-	-	-
Well-being advice during quarantines and lockdowns (citizen empowerment)	66.4	60.8	55.8	55.1	-
Scientific discoveries	-	-	-	-	63.9
Services for pandemic-related health problems (psychological crise, domestic violence)	56.7	53.8	50.1	49.7	-
Health services reduced or suspended due to the pandemic emergency	-	38.5	38.3	44.4	-
Fake news	-	-	-	-	34.9

Italians' perception of how regions, local health authorities (ASL) and hospitals use communication tools

The last results section regards the appropriateness of the ways in which regions and ASLs or hospitals employ mainstream media, websites and institutional pages on social media and messaging apps; or how they interact directly with citizens to communicate about the pandemic.

The percentages of satisfied respondents do not exceed 66% on average. How information on the website and in the traditional media (TV, radio, and press) is taken care of is perceived as "moderately" or "a lot" appropriate, with regions having a clear advantage over ASL/ hospitals.

However, significant differences emerge according to age. Those under 30s seem to value the use of all communication tools (traditional and online) highly than respondents of more advanced years. Concerning regions' way of using communication channels, percentages range from 81.8% for the website to 74.5% for social media institutional pages, 64.3% for TV, radio, or press. The regional way of communicating through social media

is also considered appropriate by 30-44-year-olds. Then, for ASL/hospitals: website is rated 66.5%, radio, press and TV is 60.7% and social media 59.1%.

In all other cases, the sense of appropriateness is just under 50% for the regions and around 30% for the ASL/ Hospitals. However, we should beware that social media and messaging apps got the highest percentage of "don't know" replies, evidently due to the scarcer use of these tools in interviews.

Therefore, messaging systems present a certain level of uncertainty as to the perception of the appropriateness of their use by the two institutional bodies, which averages around 30%.

Across the age ranges, direct contact (that includes face-to-face but also telephone) is considered the least appropriate of all the communication modes adopted by regions and ASL/hospitals. A finding which provides food for thought.

Slightly more than half of the respondents (50.7%) felt that national and local institutions are not well coordinated with each other in informing citizens about the pandemic.

Table 5. Appropriateness of the use of communication channels by Region and ASL/Hospital - sum of "moderately" and "a lot" response options, in percentages (=1001).

Region	not at all + a little	moderately + a lot	do not know	ASL/ Hospital	not at all + a little	moderately + a lot	Do not know
TV-radio-press	27.5	64.3	8.2	TV-radio-press	38.8	51.2	10.1
Institutional website	21.3	66.2	12.4	Institutional website	31.7	53.6	14.6
Official social media accounts	24	49	27	Official social media accounts	30.1	40.8	29.1
Messaging apps	38	33.6	28.4	Messaging apps	41.4	29.3	29.3
Direct contact	50.4	34.2	15.4	Direct contact	51.3	33.2	15.5

Discussion

The overview of information sources chosen by the Italian population to gain information about the pandemic (RQ1) would seem to fully reflect the current hybrid and convergent media ecosystem (Chadwick 2013; Jenkins 2006). It is enough to remind ourselves of the predominant role still played by television as the primary source of information, and the generically extended use of the Internet which, even in a country whose population structure "continues its progressive slide towards senile age" (ISTAT, 2022: 8), is confirmed as one of the three principal sources of Italians' information.

Moreover, as already illustrated in the cited literature, looking at the infodemic generated by the pandemic, it seems necessary for the informing institutions to keep investing in traditional and widely accessible information sources such as television. Investments also need to be kept up into the development and accessibility of websites which, from newspapers to online portals of national and local public sector organisations, emerged as a primary source of influence.

Additionally, among the critical issues that emerged, is the revelation that social media do not stand out as a primary source of information. So, on the one hand, we can interpret this acknowledgement as indicative of a significant decrease in misinformation and "pollution" phenomena related to the rapid circulation of content reinforced by the dynamics of social media and digital spaces. On the other hand, the increasing centrality of social media in the "networked distribution of information, marks a significant transformation in the institutional model" of science and health communication (van Dijck & Alinejad, 2020: 8). This may also suggest the need for further efforts by national and local institutions in terms of adapting their communication to the social media ecosystems.

Undoubtedly, the survey's results on the use of institution pages on social network platforms and messaging app are also part of a generational discourse that confirms an under-30s use well above the national average. In the framework of the considerations relating to perceptual differences between generations (Colombo et al. 2012), there is also the issue of trust (RQ2). On the one hand, the "healthy" state of trust expressed towards institutions (in line with 2021 Trust Edelman Barometer report) may be understood in the light of the historical phase of Italy in which the survey was conducted: with the end of the second pandemic wave, there was widespread optimism about a return to near-normality, with the prospect of growth linked to the Italian Recovery and Resilience Plan

(RRP) and the assignment of a new government with Mario Draghi as Prime Minister (Faccioli et al., 2020). On the other hand, a subjective element such as trust, which is, however, capable of acting as a corrective pivot to information disorder (Wardle & Derakhshan, 2017), as indicated by the WHO, seems to be linked closely to the younger and more educated age brackets of the population.

Once again, the favourable "balance" expressed by the interviewees as to how the institutional actors communicated on different aspects of the pandemic, national and local (RQ3), reflects the recognition of a significant effort made by public sector organisations responsible for health, also on the communication side, not least in implementing policies to deal with the emergency.

The ranking of satisfaction expressed by the sample towards actors that specifically focused on health-related communication can be interpreted in the light of the different roles they played in managing the emergency. What emerged from these elements was the need to cultivate homogeneous and consistent pandemic communication, first of all at a national level. This justified the leading role taken on at once by the Ministry of Health which deployed rather innovative communication strategies compared to the past, focusing in particular on online communication (Lovari & Righetti, 2020). Also very significant was the role of the regions, which, as never before, found themselves having to communicate directly with citizens, businesses and stakeholders, despite being a second-tier territorial authority whose traditional interlocutors are mainly the subordinate local authorities (in the health sphere, municipalities, and ASL/hospitals) (Ducci, 2021). Therefore, most regions also had to 'equip' themselves by increasing their resources in communication, especially digital.

The communication of ASL/hospitals, coordinated by the regions, is valued to a lesser extent by the sample, as is the information handled by the referral medical doctor. In fact, both actors have been particularly overwhelmed by the emergency, and this may have reduced their capacity for communicative commitment, especially in those cases where, as argued above, structures and professional profiles dedicated to public sector communication had been insufficiently appreciated in the past (with poor application of the law n.150/2000).

Turning to the critical issues that emerged, the following aspects should not be underrated:

- The perception regarding data communication, which is not entirely positive toward Government, may be

a sign of a lack of transparency in accounting for how health data are acquired (which affects what may be considered objective or not). On the other hand, it may suggest a lack of skill and consistency in presenting the data in a comprehensible manner to the audience. Considering the emerging trend of quantification and measurement of health in contemporary society (Lupton, 2016), this is a field of public health communication which must be accorded greater attention.

- Another area to improve is the communication concerning Covid-19 crises (which is just above 50% on the satisfaction rankings); but the area most in need of improvement is communication on those health services suspended due to the emergency, which was perceived negatively by the sample. This perception may have resulted from the overwhelming burden of work centred on Covid-19 diseases, but it also reveals a radical, longstanding lack of culture in public health service communication, which should always cover the health service's entire life cycle (Ducci, 2017) until, therefore, its interruption. This is a serious shortcoming which needs to be rectified, especially in times of crisis and emergency.

- Finally, regarding communication on fake news, Italians expect a far greater effort by public sector organisations; in identifying misinformation on the pandemic, they perceive the need to be supported by the very actors entrusted par excellence with the task of guaranteeing the protection and management of their health. The negative perception of fake news debunking seems consistent with the most recent literature about Italian regional digital communication on Facebook during the lockdown which highlighted the scant communication about fake news. This is the Covid-19 topic on which regions dwell the least, despite it is getting the highest level of user engagement (Ducci, 2021; Lovari, Ducci & Righetti, 2021).

The sample's opinion on the adequate use of traditional communication tools (TV, radio, press) - as on the development and accessibility of websites by the regions, albeit to a much lesser extent, by ASLs and hospitals - (RQ4), substantially reflects the source order used to gain information about the pandemic. Moreover, it is an indication that with those tools, the institutions can reach a large section of the local population, even if improvements are needed in ASL and hospital cases, especially.

The older age groups sampled do not use official social media pages and chats of public sector organizations, and those who do it have different opinions on the use of these channels in a unidirectional or bi-directional way.

However, the specific confidence expressed by younger respondents in this regard suggests that it is suitable for the public health sector to continue investing resources in digital communication, improving engagement strategies with connected audiences.

Finally, the inadequacy of the direct relationship with citizens indicates insufficient attention to cultivating the personalised, traditional type of relation, which partially is made more difficult by the safety measures adopted during the pandemic. On the other hand, this demonstrates that the culture of user centrality in the health sphere (in designing, delivering and communicating services) appears to exist more at a theoretical than a practical level. From the viewpoint of inclusion in the future, this dimension of public health communication cannot afford to be neglected, much more in emergency periods, and especially during a pandemic.

Conclusion

The Covid-19 pandemic represented a turning point for public health sector communication in Italy. The institutions' communicative effort recognised by our sample must be strengthened to intensify the inter-institutional coordination to achieve integrated management of information flows and relations with citizens during a pandemic emergency and in ordinary times.

In this sense, increasing the adoption of multi-channel strategies by health institutions at a central and local level, seems essential to overtake discrepancies among territories and organisations. An inclusive approach is needed to reduce inequalities in the institutional information access and to foster a satisfying relationship between citizens, institutions and health professionals. For this reason, strategies should be grounded on traditional and digital media and their hybrid forms, without ever neglecting the direct relationship with citizens and growing the awareness of the different ways of media consumption and health communication seeking among the population.

Alongside these disintermediated, and self-produced forms of communication, there is the necessity of strengthening media relations, considering the consistent use of official information sources (news agencies, newspapers, etc.) about pandemic.

In the post-pandemic era, new challenges emerge for public health sector communication in Italy, such as elaborating and sharing effective criteria to communicate health data, to inform on scientific discoveries, to tackle disinformation and misinformation, and to communicate on health services when they could be suspended (above

all during an emergency). In perspective, the health institutions should inhabit digital environments more effectively and engagingly, dialoguing better with citizens and adopting contemporary languages, always being aware about limits and risks of using proprietary digital platforms in the public sector (Ducci & Lovari, 2021).

These brief conclusions that emerged from our study are related to the Italian context but they could be relevant for future comparative researches. As highlighted in the OECD Report on Public Communication (2021), the pandemic has aroused the worldwide need for a greater recognition of public health sector communication, increasing the awareness of its strategic role in a era of information disorder.

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Conflicts of Interest

The authors declare no conflict of interest.

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