# It is (not) rocket science: Public health communication experience as expressed by participants at an international workshop

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## ABSTRACT

**INTRODUCTION** The past few years have faced unprecedented communication problems in healthcare as public health professionals were insufficiently prepared to spread trustworthy information during a global pandemic. We held a workshop during the 17th World Public Health Conference 2023, aiming at creating a peer-to-peer collaboration platform to exchange research findings about public health communication with colleagues worldwide. This report aims to summarize the survey results at the workshop which was entitled "It's (not) rocket science! A quick guide to successful scientific communication in Public Health" held on the first day of the conference, attracting over 150 attendees.

**METHODS** After the workshop, we invited participants to complete a 16-question multiple-choice survey via Google Forms to gather their opinions and experiences in public health communication.

**RESULTS** We collected 48 responses: most of them (71%) were from medical residents in public health. In all, 31% of respondents reported to have undergone specialized training in public health communication. In their daily work, 80% reported engaging in communication with the general population, although many lacked confidence in their knowledge; 86% had communicated a public health message at least once, primarily through public speeches (54%) and social media (44%). While 63% used spoken word as their main channel, 65% believed mixed communication methods were the most effective using more than one channel as, for example, 40% used both spoken pictures and written words. Additionally, 67% felt they had successfully reached people with different values, breaking through knowledge barriers.

**CONCLUSIONS** The findings acquired from the survey highlight existing difficulties and knowledge gaps in communication, particularly when communicating with the general population. The results offer a starting point for the implementation of tailored interventions and training programs to reduce the disparities in communication skills of public health professionals.

## INTRODUCTION

Public health has often dealt with misinformation and communication challenges. Disease outbreaks like HIV, Swine Flu, Ebola, Zika and COVID-19, have highlighted that inaccurate information leads to uncertainty, undermining public health's effective responses[1-3]. The excess of inaccurate or false information during a health crisis or emergency can worsen the epidemiological framework[4]. During the SARS-

CoV-2 pandemic outbreak, misinformation took center stage. A silent, parallel epidemic of misleading information, known as 'infodemic', made the access to health knowledge more difficult not only for the general public but also for health professionals[5]. Moreover, in the present times, social media can be a double-edged sword[6]. On the one hand, they are a useful tool for policy makers, governments, health authorities and news networks to promote awareness and health literacy. On the other hand, they represent platforms of indomitable flow of myths, incorrect epidemiological data and misleading information[7]. In these hard times, public health authorities and workers should focus to expand health literacy, develop and master communication skills, and earn public trust[8,9].

The communication challenges that public health faced in the last years were unprecedented. The COVID-19 pandemic found public health workers entirely unprepared or insufficiently educated to communicate with colleagues and patients and spread trustworthy information[4]. Therefore, in the last few years, we have dedicated ourselves to the detailed study of different aspects of communication.

On the occasion of the 17th World Congress on Public Health, held in Rome during 2–6 May 2023, we organized a workshop on public health communication. At the end of the workshop, we invited participants to take an online survey. Our aim was to investigate audience's attitudes and experience in the field of Public Health Communication. The results of this survey are the focus of this short article.

## METHODS

### The study setting

The workshop "It's (not) rocket science! A quick guide to a successful scientific communication in Public Health" took place on the first conference day on 2 May 2023, and lasted 60 minutes.

### The workshop

The key questions that we wanted to address were:

- How to present scientific findings and relevant data to scientists and health professionals? How to make data more understandable?
- How to deliver a clear message and maintain public trust in science through successful campaigns?

The workshop had two sessions each lasting 20 minutes. The initial session focused on skill enhancement, specifically targeting the communication of scientific information and data within the healthcare community and among industry 'insiders'. This segment started with a presentation entitled "How to: Data Visualization", emphasizing the importance of understanding core principles in visualizing data to enhance exploration and explanation of data. In today's fast-paced world, data visualization offers a swift and universally comprehensible means of understanding and conveying information. Linked to the first topic, the second presentation of the session delved into digital communication and artificial intelligence, shedding light on the emergence of the digital educator and its applications within the realms of epidemiology and public health. This segment aimed to elucidate the evolving role of digital technology in education and its profound impact on the dissemination of critical health information to the general public.

In the second session entitled "Communicate health to people: successful examples", some practical examples were provided showcasing the effective utilization of animated visuals, in cartoon style, within public health initiatives[10]. These examples underscored specific, and often overlooked, populations such children, adolescents, and young adults. The objective of these examples was to heighten awareness on pertinent health issues such as the COVID-19 and vaccination and the proper utilization of antibiotics[10].

Between the two sessions a symposium on "Do's and don'ts: infographics for health professionals vs general public" was planned to uncover the most common mistakes in graphical communication. During the symposium, some real world and fake examples of good and bad visual communication were analyzed to give the audience a practical guide. A "Questions & Answers" session was reserved for the end of the workshop[11].

### Evaluation

At the end of the workshop, we invited participants to take an online survey asking their attitudes and experience in the field of PH Communication. To collect workshop feedback and investigate audience characteristics, we designed an *ad hoc* questionnaire that was administered during the Q&A session, when a QR code linking to the survey was shown ensuring an anonymous participation. Data were collected during 2–17 May 2023, among professionals who attended the workshop.

### Study design

The questionnaire consisted of 16 multiple-choice questions and was designed with the approval of all the authors and speakers that took part in the workshop (Supplementary file Table S1). The cross-sectional survey investigated sociodemographic information, including education level and occupation, and communication skills, including background and specific education. The last part was designed to assess participants' experiences in communication, providing a progressive focus on their ability to burst their own 'knowledge bubble'[12,13], in other words the construct that filters knowledge attainable only to those within a specific environment, and to reach the general population.

### Data analysis

Data were collected electronically via Google Forms and analysis was performed using the Software IBM SPSS Statistics Version 28, 2023. Data visualization was created with Microsoft Excel (Office Package, Microsoft Corp., Redmond, WA, 2024). Categorical variables are presented as

**Table 1. Characteristics of survey participants. Data from the survey administered at the end of the workshop "It's (not) rocket science! A quick guide to a successful scientific communication in Public Health" that took place during the 17th World Congress on Public Health in Rome, May 2023 (N=48)**

| Characteristics | n (%) |
|---|---|
| **Age** (years) | |
| 25–34 | 37 (77) |
| 35–44 | 10 (21) |
| 45–54 | 1 (2) |
| **Gender** | |
| Female | 28 (60) |
| Male | 18 (38) |
| I prefer not to answer | 1 (2) |
| **Country of work** | |
| Italy | 39 (81) |
| Portugal | 3 (6) |
| United Kingdom | 2 (4) |
| Other[a] | 4 (9) |
| **Education level**[b] | |
| Bachelor's degree | 1 (2) |
| Master's degree | 31 (65) |
| Higher than Master's degree | 15 (31) |
| **Institution of work** | |
| Hospital/public health or primary care department | 42 (88) |
| University | 39 (83) |
| **Occupation** | |
| Medical resident in Hygiene and Public Health | 34 (71) |
| Research fellow | 5 (10) |
| Epidemiologist | 3 (6) |
| Other[c] | 6 (13) |
| **Structured training in public health communication received** | |
| Yes | 15 (31) |
| No | 33 (69) |
| **Ways of reaching training in communication** (N=16)[d] | |
| University[e] | 9 (60) |
| Master's/other private course | 4 (27) |
| Company/institution of work | 3 (20) |

a Other category includes Indonesia, Mauritania, Rwanda, and Republic of South Africa. b One participant did not answer. c Other category includes permanent public health department or hospital staff, academics, postgraduate students, and clinicians. d Those who received structured training in public health communication (n=15). e One participant reported having received public health communication training in both university and in a Master's course.

frequencies and percentages.

## RESULTS

More than 150 people attended the workshop "It's (not) rocket science! A quick guide to a successful scientific communication in Public Health" and 48 participants, around 30%, completed the online survey. Most respondents (77%) were aged 25–34 years and 60% identified themselves as female. The majority declared that they work in Italy; however, professionals employed in the following countries also participated in the data collection: Portugal, United Kingdom, Mauritania, Rwanda, and Republic of South Africa. The level of education mainly reported was a Master's degree (65%), followed by PhD or other higher academic qualifications (31%). Most of the respondents (71%) were medical residents in public health. Only 31% of the respondents reported having received specific training in public health communication. Of these, 60% were trained during university years, 27% through Master's or private courses, and 20% through in-company courses (Table 1).

No significant differences in terms of training received were found when stratifying the sample by age, gender, nationality, education level, and working area.

### Do we use communication skills in our daily practice?

As shown in Figure 1, in question 10 of the survey (Supplementary file Table S1) professionals most often reported the need to communicate in their daily practice with colleagues and communication with co-workers also appeared to be the one considered the least difficult. On the other hand, communication to the general population was a common task as well, reported as a daily activity by 80% of the respondents, and most of the sample felt hesitant and lacking knowledge. Finally, 57% of survey participants declared that they used digital communication channels in their daily practice; however, in question 11 of the survey (Supplementary file Table S1) more than 60% reported that they lack specific communication skills with such devices. Furthermore, those who received university-level communication training appeared to feel less competent in addressing the population (89%) against those who did not (11%).

### Do we reach the general population with public health messages?

When asked if they had ever been involved in communicating a public health message to the general population (Figure 2), the 86% of the sample declared having been at least once involved; the most frequently reported contexts were public speeches (54%), social media (44%), schools (25%), hospital/wards (23%), and registered interviews (23%). In question 13 of the survey (Supplementary file Table S1), communication channels were investigated as well: 63% of respondent reported to communicate manly via spoken word, 52% with words and pictures, 40% by written word,

**Figure 1. Percentage of respondents declaring their most used communication areas (purple dot) vs the communication areas where they feel having a lack of appropriate knowledge (blue dot). Data from the survey administered at the end of the workshop "It's (not) rocket science! A quick guide to a successful scientific communication in Public Health" that took place during the 17th World Congress on Public Health in Rome, May 2023 (N=48)**

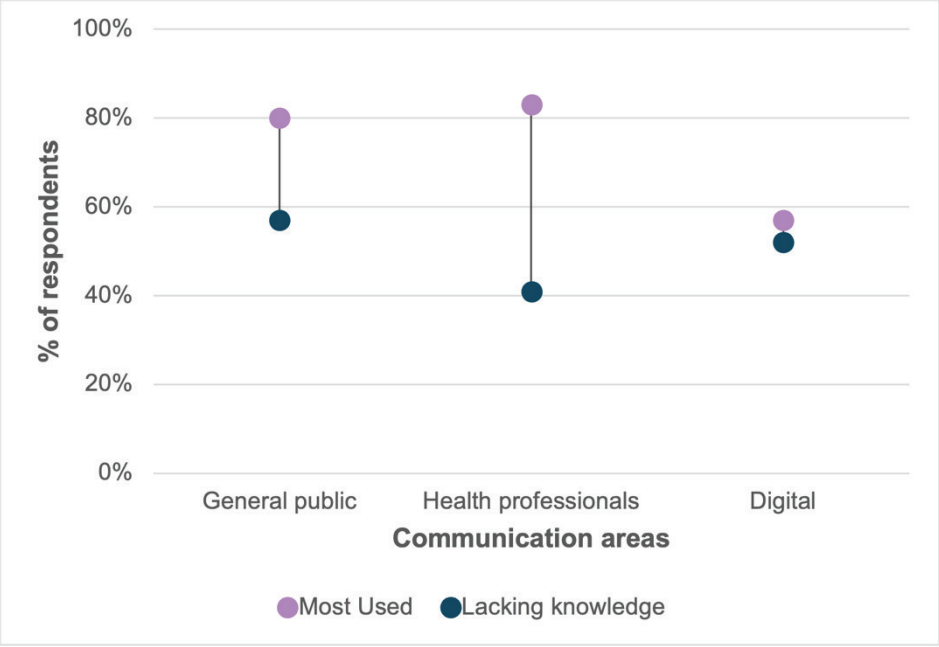
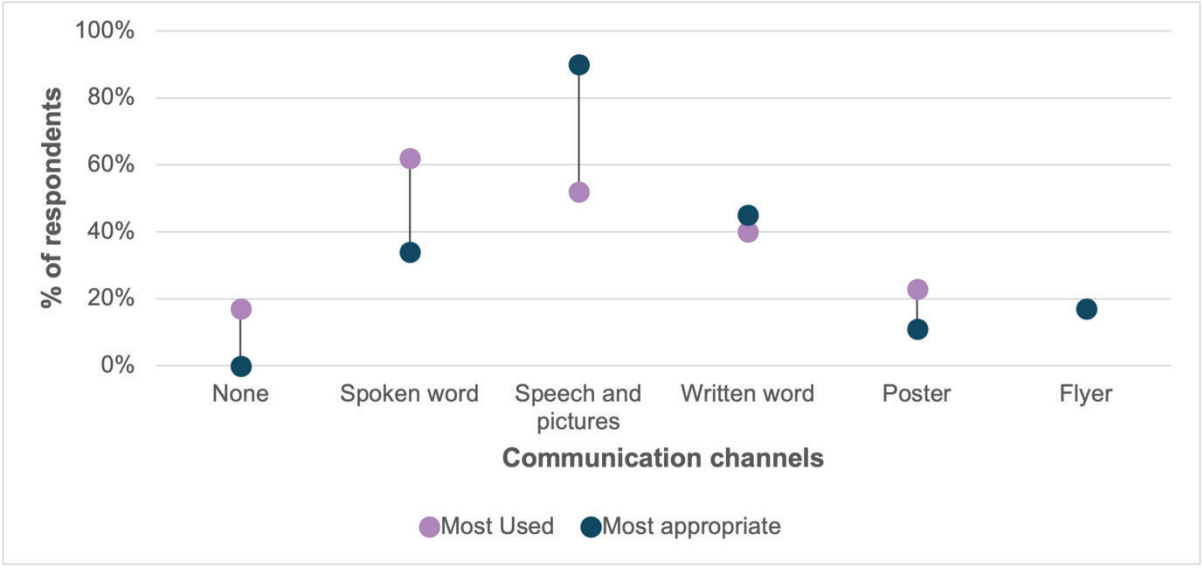



**Figure 2. Percentage of respondents declaring their most used communication channels (purple dot) vs the communication channels they feel more appropriate for communication (blue dot). Data from the survey administered at the end of the workshop "It's (not) rocket science! A quick guide to a successful scientific communication in Public Health" that took place during the 17th World Congress on Public Health in Rome, May 2023 (N=48)**



23% through posters, and 17% flyers. Although frequently used, the speech channel and the written channel did not seem to be considered a good channel, as reported in question 13 of the survey (Supplementary file Table S1). Mixed channels of communication were considered the most effective (65%) for reaching the general population; 40% would use both spoken pictures and written words and 27% would use both speech and spoken pictures.

**Do we reach people with different values (bubble burst)?** In all, 67% of respondents reported having succeeded in bursting the knowledge bubble reaching people with different values. The settings in which this occurred most often appeared to be public speaking (35%), ambulatory (26%), school (22%), social media (22%). Registered interviews and books did not seem to be considered favorable contexts to leave the knowledge bubble, as 2% and 0% of our respondents selected them, respectively. In particular, it appeared that those who received communication training, knew how to burst the bubble (80%) and, specifically, 50% of them burst the bubble in schools.

## DISCUSSION

This article aims to provide a general analysis of the issues surrounding public health communication and present data from a survey administered to public health professionals during an international meeting. The workshop, which was attended by a large and multidisciplinary audience underlined the perceived importance of addressing the communication challenges in public health.

The survey conducted after the workshop revealed valuable insights into the profile and experiences of the participants, particularly highlighting the growing interest in public health communication among young professionals. However, it was noted that only a minority of respondents reported receiving specific training in this domain, indicating a potential gap in educational training in communication skills in public health. Other studies observed a lacking background and specific training in communication among public health trainees[14], proving that the knowledge gap in communication is tangible.

Furthermore, the study explored the impact of formal education in communication on the competence of professionals in addressing the general population. Surprisingly, participants who received university-level communication training appeared to feel less competent in addressing the population compared to those who did not. The results indicate that individuals who engage with specific aspects of public health communication gain a deeper understanding of the breadth of this domain. As a result, implementing focused educational programs to improve communication abilities among public health professionals could effectively address identified deficiencies. Utilizing evidence-based remote video-based behavioral skills training could be beneficial in addressing particular areas of low competence, such as public speaking, and overcoming associated anxiety disorders[15].

Further, the present study explored the channels through which professionals communicate health information, with mixed channels being perceived as the most effective. This insight provides practical guidance for future interventions, emphasizing the importance of utilizing diverse communication strategies to reach a broader audience particularly with a powerful source like social media that are drawing attention with their pros and cons[16-18].

Moreover, the findings regarding the success in bursting knowledge bubbles underscore the importance of tailored communication approaches. Public speaking and social media emerged as effective settings for challenging pre-existing beliefs, emphasizing the role of these platforms in fostering health literacy.

The recognized dual nature of public health underscores the significance of scientific evidence alongside effective communication with stakeholders and the public to enhance public health outcomes[19]. Evidence-based public health is a critical aspect of this duality, as it emphasizes the importance of using the best available evidence for decision-making in public health practice and policy[20]. This evidence can be derived from various sources, including epidemiological studies, community-based research, and stakeholder engagement[21-23]. Furthermore, effective communication strategies, such as risk communication, play a crucial role in ensuring that public health messages are clearly understood and acted upon by the general population[24-26]. Stakeholder engagement is also highlighted as a key component of evidence-based public health, as it not only makes research and research processes more visible but also contributes to new networks and optimized data collection on public health perceptions[27]. Additionally, the role of public engagement with science is crucial in driving understanding and action in public health, as it helps bridge the gap between scientific knowledge and public understanding[28,29]. This is particularly important in the context of public health emergencies, where effective communication and engagement with stakeholders are essential for containing outbreaks and implementing appropriate public health measures[30,31].

### Limitations

One of the main limitations of this study pertains to selection bias among the respondents who completed the questionnaire. A plausible selection bias is evident in the fact that 77% of respondents were under the age of 34 years, suggesting that the topic of communication in public health may be more appealing and engaging to younger age groups. However, we have no information about the total workshop's audience. Additionally, it is important to consider that those who participated in the workshop were likely already interested in the topic of communication or participated because they felt that they lacked knowledge in

this area. This pre-existing interest or perceived gaps could have affected their engagement with the workshop and their responses to the questionnaire. Another significant limitation is the small number of participants who completed the questionnaire, which could limit the generalizability of the findings. Furthermore, the study would have benefited from the administration of a preliminary survey prior to the workshop, in addition to the post-workshop questionnaire, in order to better evaluate workshop output. This pre-event survey would have provided baseline data, enabling a more comprehensive assessment of the workshop's impact on participants' knowledge and attitudes. In addition, by shaping their attitudes, the workshop could have affected how participants reported their experiences and perceptions. This potential influence highlights the need for caution in interpreting the results, as the positive effects reported may partly reflect the immediate impact of the workshop rather than long-term changes in attitudes or behaviors through communication in public health.

## CONCLUSIONS

The insights gained from this survey contribute to the ongoing discussion on the challenges of public health communication. The findings provide a starting point for developing targeted training programs and interventions to address the identified gaps in communication skills among public health professionals. As the field of public health communication continues to evolve, concerted efforts are required to equip professionals with the necessary skills to navigate the complex landscape of health information dissemination.

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**CONFLICTS OF INTEREST**
The authors have completed and submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest and none was reported.

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Ethical approval was not required for this study. Participation in the survey was deemed informed consent.

**DATA AVAILABILITY**
Data sharing is not applicable to this article as no new data were created.

**AUTHORS' CONTRIBUTIONS**
Conceptualization: CL, EF and LP. Methodology: LP, TF, AGC and AO. Formal analysis, data curation: CL, EF and LP. Writing of original draft: CL, EF, LP and TF. Writing, reviewing and editing of manuscript: all authors. Supervision: TF, AO, AGC, ER and MV. All the authors read and approved the final version of the manuscript.

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