frontiers | Frontiers in Communication

TYPE Original Research
PUBLISHED 09 May 2025
DOI 10.3389/fcomm.2025.1564491

OPEN ACCESS

EDITED BY
Sean J. Upshaw,
The University of Texas at Austin,
United States

REVIEWED BY
Rita Gill Singh,
Hong Kong Baptist University, Hong Kong SAR, China
Nicole Kelp,
Colorado State University, United States

*CORRESPONDENCE
Bente Schøning
✉ bente.evjen.schoning@uit.no

RECEIVED 21 January 2025
ACCEPTED 21 April 2025
PUBLISHED 09 May 2025

CITATION
Schøning B, Sandanger TM, Rosenbaum SE and Wien C (2025) Health researchers' voluntary science-communication with non-academics: motivations, barriers, and practices.
Front. Commun. 10:1564491.
doi: 10.3389/fcomm.2025.1564491

Health researchers' voluntary science-communication with non-academics: motivations, barriers, and practices

Bente Schøning[1]*, Torkjel M. Sandanger[1], Sarah E. Rosenbaum[2] and Charlotte Wien[1]

[1]Department of Community Medicine, Faculty of Health Sciences, UiT Arctic University of Norway, Tromsø, Norway, [2]Centre for Epidemic Interventions Research, Norwegian Institute of Public Health, Oslo, Norway

Introduction: This study investigates the motivations, practices, and barriers encountered by health researchers in Norway when engaging in science communication with non-academic audiences. Given the legal mandate for public science communication in Nordic universities, understanding these dynamics is crucial for enhancing the quality and impact of research dissemination.

Methods: The research was conducted at UiT Arctic University of Norway and involved semi-structured interviews with 14 active health researchers from various disciplines. A realist thematic analysis was employed to identify key themes related to user-involvement practices, motivational factors, and communication barriers. Participants were selected based on their active engagement in science communication, and data were collected through interviews conducted in Norwegian.

Results: The analysis revealed three main themes. First, researchers often employ user-involvement strategies throughout the research process, although communication of final results tends to revert to one-way dissemination. Second, motivations for engaging in science communication include a sense of duty to the public, career-enhancing visibility, and personal satisfaction. Third, barriers such as negative media experiences and lack of institutional support hinder effective communication. Researchers expressed a need for more robust institutional support, including resources for engaging with users and incentives for non-academic communication.

Discussion: The findings underscore the importance of institutional support in facilitating effective science communication. By providing resources and incentives, institutions can enhance the quality and impact of communication efforts, ensuring that research findings are accessible and relevant to the public. The study highlights the need for a shift from one-way dissemination to more participatory communication models, which can improve public engagement and knowledge uptake. Addressing barriers such as negative media experiences and lack of support is crucial for empowering researchers to communicate effectively.

Conclusion: This study provides valuable insights into the dynamics of science communication in the health sector, offering recommendations for institutions to enhance support for researchers. By addressing identified barriers and implementing supportive measures, universities can empower researchers to effectively communicate their findings to non-academic audiences, thereby

fulfilling their public engagement obligations and improving the societal impact of their research.

KEYWORDS

institutional support, motivational factors, Nordic universities, science communication, user-involvement

1 Introduction

Science communication to a non-academic audience adds to the pursuit of open science. Although academics are increasingly publishing in open access spaces, there is still a larger part of scientific output which is closed and unavailable for the public through the expensive paywalls of large publishing companies (UNESCO, 2023). The wide use of English language coupled with scientific jargon brings true accessibility of academic papers into question, as it might well be a very small group of experts in specific fields that actually understand the content (Kendall-Taylor and Levitt, 2017). Science communication beyond the academic world therefore plays an important part towards the mission of open science, as it opens up access to research material which might be both academic in language and closed behind a paywall (Grand et al., 2010; Jensen and Gerber, 2020).

Researchers who communicate with non-academic audiences are both motivated and impeded by different influencing factors. The individual researcher may be compelled by a sense of social responsibility to improve public outcomes (Crosswaite and Curtice, 1994; Cunningham-Erves et al., 2021; Jensen, 2022; Rose et al., 2020; Singh et al., 2019) or increase public interest and trust in science (Martín-Sempere et al., 2008). Health researchers, working in a field with direct relevance for the broader public, have an extra incentive to communicate with non-academic audiences. Researchers more generally may also be driven by a desire to increase the visibility of their scientific field or enhance their career through increased media exposure (Baron, 2010; Hundey et al., 2016; Lambovska and Yordanov, 2020). Personal satisfaction and enjoyment are also motivating factors (Andrews et al., 2005; Martín-Sempere et al., 2008).

Institutional policies also play a central motivational role. Support from a researchers' home institution can be incentivizing (Michie et al., 2011) as encouragement may increase the perceived value of science communication activity (Jensen, 2022; Jensen and Gerber, 2020; McElfish et al., 2019; Rose et al., 2020). In Norway, one of the universities' core duties is to conduct science communication beyond the academic world (Norge, 2024). Engaging with society through various initiatives is also a focus at universities in the other Nordic countries (Hetland, 2014; Schnurbus and Edvardsson, 2022). International research funders such as the EU and national funders such as The Norwegian Research Council prioritize applications that can demonstrate likely impact and that have clear plans for dissemination. The European Commission for instance emphasizes the importance of dissemination and exploitation of research results to ensure that funded projects achieve significant impact (European Commission and European Research Executive, A, 2023). Science communication becomes a tool toward achieving a meaningful societal impact, motivating researchers, their institutions, and funders alike.

However, individual researchers experience important barriers to being active in science communication, such as lack of skills, lack of resources, media distortion, and cultural and language barriers (Fischhoff, 2013; Jamieson et al., 2017; Rose et al., 2020). Though institutional support, such as career incentives and training might help, successful institutional support is a multifaceted endeavor with great complexity (Kimbrell et al., 2022). Even in institutions where science communication activity is monitored and recorded, it is still often not sufficiently valued (Besley et al., 2018; Koivumäki and Wilkinson, 2022; Rose et al., 2020; Singh et al., 2019).

Additionally, the nature of science communication is evolving, shifting from one-way information dissemination to more participatory approaches with user-involvement (Besley et al., 2016; Hetland, 2014; Palmer and Schibeci, 2014). This places new demands on the kind of skills researchers need for successful engagement. Despite lofty policy shifts towards higher degree of citizen engagement in research by, e.g., the EU, questions remain about the practical implementation of these changes (Fischhoff, 2019; Mayr, 2013). Complex sets of skills are needed to manage and utilize public engagement. Still, this shift is to be taken with caution as other studies show that scientists are still focusing on one-way communication (Nerghes et al., 2022).

In this study the public engagement of science communication is defined as "the social conversation around science" (Trench and Bucchi, 2021). This inclusive definition emphasizes science communication as a dynamic and multifaceted interaction, encompassing various formats and approaches, from informal and pleasurable exchanges to targeted and strategic practices. It considers science communication not merely as a process of disseminating stabilized knowledge, but as an ongoing dialogue in a broader cultural context where diverse forms of expertise, creativity, and public engagement converge.

With stronger local support from their institution, researchers could aim for more advanced models of communication increasing user-involvement, thereby increasing the quality of their science communication efforts (Brownson et al., 2018; Jensen, 2022; Jensen and Gerber, 2020). But resources for training faculty staff in communication, including support and media engagement, is frequently limited (Cunningham-Erves et al., 2020; Cunningham-Erves et al., 2021; Dudo, 2013). Consequently, researchers often face the challenge of translating their academic findings into accessible messages for the public on their own (Grimshaw et al., 2012).

For an institution seeking to stimulate non-academic communication activity, the task of incentivizing or training researchers who show no current interest in this endeavor can be extra resource-demanding. Therefore, one strategy could be to target initiatives supporting researchers who are already active communicators. Understanding factors that influence the most active communicators, both positively and negatively, can also lead to insights of how non-academic communication might be supported

more broadly. Our perspective is that of a small, decentralized communication support team embedded within a Norwegian university health research department. In this study, we sought to understand the experiences of our most active communicators, in order to inform future deliberations of how we might best support communication with non-academics.

Previous studies have described motivational factors and barriers experienced by European researchers when communicating their science. A Swedish study found that motivational factors and barriers in Sweden are similar to those in the rest of Europe (Wilkinson et al., 2023). The Nordic countries, with a common culture and history, share approaches and conditions in the field of communication (Hetland et al., 2020; Fernández-Quijada, 2014). However, there is little research on Norwegian researchers' motivation for conducting science communication (Carlsen and Riese, 2016).

Our research questions: For health researchers who are active communicators with non-academics, what motivates them, what characterizes their practices, and what barriers do they experience?

Insights drawn from this work can help universities and other research institutions in Norway and other countries facing similar conditions – non-academic communication commitments coupled with limited resources – understand how they might better support researchers in science communication practices.

2 Methods

This is a qualitative study. We collected data through semi-structured interviews and employed a realist thematic analysis method. The researchers obtained ethical approval from the Norwegian Agency for Shared Services in Education and Research and the PhD project review board at the Faculty of Health Sciences.

2.1 Identifying and recruiting participants

As we first were interested in understanding active health researchers' motivations, opportunities and competence occurring in the context of science communication practices at universities, we sought to identify health researchers actively engaging in science communication activities, where 'science communication' is defined as the social conversation around science and 'activities' includes all activities that can be placed on the continuum of user-involvement (Trench and Bucchi, 2021).

We defined 'science communication practices' as any efforts by health researchers to communicate with non-academic audiences, including any involvement they had with users, defined as individuals or groups who are intended beneficiaries, stakeholders, or end-users of the research outcomes. The definition of users thus includes non-academic audiences and the public (Cargo and Mercer, 2008).

We first selected and invited a set of five participants from the same university department as the first author and identified them as the most active communicators through the CRISTIN registry. To enhance the richness of the data, we then expanded our sampling strategy to include researchers from all departments within the university's health faculty. The sample was assembled using convenience sampling, meaning we requested each department head of our university to recommend researchers who met our inclusion criteria. The last set of 10 participants we invited were chosen based on their ranking at the top of the department heads' lists. All the invitations were sent through email. One individual declined to participate.

The first author BS was in the same faculty as all the informants but knew them only professionally. With one exception, she had not collaborated with any of them. They were all aware that the study was a part of her PhD project (The relationship between BS and informants and its potential impact on the study is discussed more in depth in the Limitations section).

2.2 Data collection process

From September to November 2023, BS (first author and female PhD student, with previous interview training and experience as a masters student) conducted individual semi-structured interviews that lasted up to one hour. The interview guide, available as Supplementary materials, included twelve open-ended questions focusing on researchers' capabilities, opportunities, and motivations to communicate about their research with non-academic audiences. The three categories come from the COM-B behavior change wheel (Michie et al., 2011) provided us with a useful starting point for initiating discussions with the participants that covered both personal and contextual factors. After conducting all 14 interviews, the data collected was substantial, and a saturation point was achieved.

We conducted the interviews in Norwegian for ease of communication, either in person or via Teams, depending on the researcher's location. We pilot-tested the interview guide and adjusted it to ensure clarity and relevance. We obtained consent from all the interview subjects.

2.3 Data analysis

We transcribed and anonymized the audio files from each interview before entering them into NVIVO. We analyzed this data using a realist thematic analysis method, in order to describe experiences, meaning and the reality of the participants (Braun and Clarke, 2006; Clarke, 2021). First, we developed codes deductively, based on the interview guide main themes of motivation, opportunity and competence. After becoming familiarized with the dataset by reading and rereading the transcripts, we produced additional codes inductively. Then we fed the data to the AI tool provided by the authors home institution (Chat.uit.no) that guarantees data is not shared. We compared the original codes with codes presented by the AI tool. We ended up not adding new themes to the codebook.

We originally conceived this study around a somewhat broader objective: to understand health researchers' *motivations, opportunities and competence* to engage in non-academic communication, inspired by the behavior change wheel of Michie et al. (2011). This objective produced a vast amount of data from the interviews. Initial analysis of the interview data therefore led to a narrowing of the objective retrieving all instances of data coded as «science communication motivation» from the data corpus and used that extracted data set as the basis for our analysis. The health researcher participants were all prepared to talk about why they thought that science communication was important; therefore,

motivation was a salient theme in the data corpus. *Barriers*—our second focus of analysis –appeared naturally alongside the motivational factors as contrasts.

Once these topics were selected and analyzed, we discovered a third theme connected to the codes for motivation. To fully examine the journey from initial motivations to the final communication activity while considering potential barriers, we could explore how the researcher manages to communicate science through looking at their practices related to their motivations. Consequently, we conducted a third analysis of the researcher's science communication practices regarding user-involvement.

2.4 Data management and translation

We used NVivo to manage and transcribe interviews. We minimized translation bias by only translating the quotes used in this paper, translating them from Norwegian to English using ChatUiT. The original Norwegian quotes and their corresponding English translations are available as Supplementary materials. We also used ChatUiT to improve the language of this manuscript based on a complete draft provided by the first author.

3 Results

We interviewed 14 researchers from UiT Arctic University of Norway health departments who actively communicated with a non-academic audience. They all held permanent positions ranging from academic director to professors across various disciplines including public health, nutrition, and preventive medicine. Participants included eleven females and three males; age range from 35 to 70.

We divided the findings into three main themes. The first theme explores the motivating factors that appear to drive researchers' science communication activities. The second theme covers the user-involvement practices participants employed in their science communication activities. Finally, the third theme addresses barriers to effective communication that researchers experienced at different stages of their work.

3.1 Factors driving science communication

3.1.1 Self-imposed sense of duty towards the public

All participants in this study were active communicators of their research, and although upholding a social conversation around their science with the public was not required by their home institution, some believed it was a mandatory part of their job description. However, most expressed that they felt an intrinsic motivation to communicate with non-academic audiences, experiencing it as a sense of duty:

> So the money we receive for research comes from taxpayers. We have a duty to tell them everything we believe they should know. (1, number is referring to the overview of quotes in Supplementary materials)

Similarly, all participants of this study described experiencing a self-imposed duty to non-academic audiences, not only because their research is funded by "taxpayer's money," but also because their knowledge should be available for the public so that individuals and organizations can make informed and healthy choices.

> It's difficult to say whether we are reaching out effectively or not. But in relation to health bureaucrats, I feel that we have broken through the sound barrier. Right. That we have managed to… That they are listening and want to take action based on the research we have done. (15)

Personal satisfaction and enjoyment are also relevant factors for most of the participants. They experience getting something in return when they are engaging with their audiences.

> I find it terribly fun to engage in good discussions. […] Perhaps getting people, on an individual level, to think things through once more. (2)

3.1.2 Career enhancing visibility

Visibility gained through media engagement can significantly benefit researchers' careers, as illustrated by one participant's experiences of receiving invitations to participate in various initiatives and international engagements:

> Being in the media garners attention, leading to invitations to participate in various initiatives. This extends to international engagements as well. I have served on panels for Young Investigators, Young Scientist, EU, and more… These opportunities arise from visibility. Had I remained secluded in my office, they might never have known about me. (3)

This visibility not only leads to recognition of the researcher's contributions, but also opens opportunities for further collaboration and influence. Being featured in the media or participating in public discourse as an expert can lead to roles in panels, advisory groups, and policy-making bodies, thus extending the impact of one's research beyond the academic world.

3.2 User-involvement practices for science communication

When asked how they start the process of communicating science and if they had a strategy, all participants described employing some type of user-involvement practice, with various ways of identifying and engaging them. There were, however, differences in the degree, timing, and follow-through of involving users.

3.2.1 Communication activities represented all three science communication models

Some researchers described activities with minimal or no user-involvement, such as writing op-eds in newspapers, participating in a podcast, or contributing to science communication blogs; these clearly represented the one-way deficit model. Some described holding lectures or presentations that allowed the public to interact directly with the researcher through questions, representing a move towards

the dialogue model. The participation model was represented by activities such as meetings and workshops where the public actively participated in developing new, future research questions. However, the degree of user-involvement was not the only pattern we uncovered. Researchers also described differences in the timing and follow-through of their user-involvement practices.

3.2.2 Timing and follow-through of user-involvement practices

Most participants thought about users before applying for research funding. Some of them drew on their own experience in previous research projects when deciding what to study and why it will be useful for the user. These researchers also planned to involve their users in their project, either as user representatives in an advisory role, or by seeking out users and interviewing them as needed. What they ended up doing, however, was not always what they intended to do or held as an ideal.

> One seeks to achieve dissemination in all parts of the research process. It has, in a way, forced itself a bit forward. You do not get any projects through if you do not have good communication with the target group right from the start. At least, that is the ideal. (10)

A second kind of strategy was planning and operationalizing user-involvement throughout the research activity, but not in the phase where they communicated results from their studies. These researchers stopped their dialogue with users when they were ready to communicate results.

> No, I think that the dissemination of research comes afterwards. But it is important to do research on and with the groups one is going to study. User-involvement is essential. I do not think that's it. It's not research dissemination. (11)

A third user-involvement practice was when researchers engaged in a constant dialogue with their study population from start to finish of their research processes.

> All along, we have thought about dialogue, not just communication, not just one-way communication, but mutual dialogue where we respect each other. (12)

For example, researchers who used this practice described giving post-project presentations to the people who they studied, welcoming feedback and dialogue about the results. Researchers practicing this considered it valuable for future research and their personal growth.

> My goodness, what feedback we got! It was so much fun! People were curious and positive, but they were very much like, yes, but listen here. Couldn't you have done it this way instead. (13)

3.3 Barriers for science communication

3.3.1 Negative experiences with the media

When we asked researchers about cases of difficult experiences with sharing science with the public, many shared powerful stories from working with journalists. They talked about times when things did not go as expected or when they learned a valuable lesson after working with journalists.

One of the informants lost a collaboration partner after having been involved in a fabricated interview in a newspaper and she consequently lost her planned PhD project (R5). Another had to defend her research after a journalist had wrongly cited her and leading to a highly racists conclusion about health in a population (R4). A third researcher had experienced that a journalist was creating an otherwise non-existing conflict of opinion between two colleagues. She was later accused of censorship when she tried to convince the journalist that the colleagues were not in disagreement (R6). Because of such experiences, several of the informants limited their contact with media. On the other hand, some of the senior informants described positive examples of cooperating with trained health science journalists.

3.3.2 Lack of institutional support and incentives

The health researchers we interviewed understood 'institutional support' as meaning communication advice, practical help in producing communication products, and training. However, they expressed uncertainty about what support they could expect from their home institution. A few had attended communication training courses. Some researchers were unaware of how to access communication support. Some participants did have knowledge of the existing system but did not find it helpful. Several had contacted the university communication department with request for help but did not receive support.

> None of us are influencers with many followers. So either the university had people who could handle that part, or they could give us input. But when we are in contact with the communications department here, they do not know that. They're not on the latest wave either. (17)

One researcher recounted an experience with the centralized communication department after she had published a paper in a scientific journal. A press release made by the same scientific journal about her paper became the start of a global media coverage. The researcher was contacted by a famous health journalist from CNN and thereafter, amongst others, the BBC, Swedish national TV, and Al Jazeera. In the middle of what she describes as fantastic media coverage, she contacted her home institution wondering if they did not want to make a story about this from their perspective. The home institution responded saying that that they may or may not write something about this. The researcher described herself annoyed and very surprised by this passive response. Her story went all over the world, but her home institution did not pick it up.

> And then they say: 'Maybe it was a bit interesting. We do not really know.' Jesus Christ. That there… That gave me a bit of a bad feeling about the university […]. (4)

An additional form of motivational support, peer support, was described by another participant explicitly expressing: "But one probably misses colleagues actually cheering you on." (5) Participants explained that it was important to support each other, to give

colleagues encouraging feedback when they had been out in public communicating their research. Some also described feelings of apprehension that illustrated the need for positive peer acknowledgment:

> Because it is indeed scary, right? And at the beginning, there was a lot of fear about somehow saying something wrong, or that maybe some of the older colleagues would think that something said about a topic she is knowledgeable about. (6)

Participants also desired to be rewarded, such as being offered an incentive for communicating to a non-academic audience.

> There's definitely a lot to gain from creating incentives for research dissemination at an organizational level, I absolutely believe that. It could motivate more people to engage in it. (16)

According to several of the participants there are very few such institutional incentives. The participants' home institution awards a single annual winner of the Faculty Dissemination Prize; beyond this there are no systematic incentives for non-academic communication, according to the Communication, Research, and Innovation department of the participants' university (UiT Arctic University of Norway—Head of Communications H. Karde and Head of Office P.V. Storeheier, personal communication 14. February 2024).

3.3.3 Rewarding the inactive

Researchers may have different individual preferences and priorities related to how much time they spend communicating to the public:

> My experience is that some who aspire to an academic career place less emphasis on research dissemination as it can be time-consuming. Instead, they prefer to write [scientific] articles, believing it to be more beneficial in the long run. (7)

However, there are also systematic incentives for *not* prioritizing science communication, according to almost all of the participants of this study. They felt the system rewards those who spend their time publishing in scientific contexts prioritized according to publishing points and impact factor.

> If we had received credit for it, just like our research, if it were incorporated in a way that also brought funding to the university, we could dedicate more time to it. It is the time factor. We have full schedules, all of us. We mentor many students and have our own projects to run. That is our workday. Communication is somewhat on the side. It is voluntary, even though we have a strategy for everyone to do it. (8)

The lack of incentives and the attitudes toward institutional support are closely interconnected. When asked about the type of support they desired from their institutions, the participants expressed a need for more assistance, but not in the form of communication training. They viewed such training as too time-consuming, taking up even more of their time in addition to time already spent (voluntarily) on non-academic communication activity that the current system does not reward.

4 Discussion

We interviewed 14 researchers from the health departments at UiT Arctic University of Norway, focusing on their engagement with non-academic audiences. The participants, who held permanent positions ranging from academic directors to professors, were predominantly female and spanned various disciplines such as public health, nutrition, and preventive medicine. We have categorized the findings into three main themes: motivational factors, practices for user-involvement, and barriers to effective communication.

4.1 Motivational factors

The active communicators we interviewed expressed feeling a self-imposed sense of duty to communicate with the public and being driven by the belief that taxpayer-funded research should be accessible to the public. Personal satisfaction and career-enhancing visibility were also significant motivators. Media engagement increased researchers' visibility, leading to further opportunities and recognition. Our findings are supporting by previous research confirming that important motivational factors are researchers' ethical perception that communication is the right thing to do (Crosswaite and Curtice, 1994; Cunningham-Erves et al., 2021), in addition to visibility, career advancements and personal satisfaction (Andrews et al., 2005; Hundey et al., 2016; Martín-Sempere et al., 2008). This intrinsic motivation to give back likely fosters a science communication practice that actively involves the target audience. Researchers aim to conduct studies that are beneficial to users and are committed to disseminating new knowledge to those who can apply it effectively.

4.2 User-involvement practices

Researchers employed three user-involvement practices. The first involved identifying and engaging users early in the research process, though actual practices sometimes deviated from initial plans. The second practice involved user engagement during research but not when communicating findings from their research. The third practice maintained a continuous dialogue with the study population throughout the research process, including during the late project phases.

According to earlier research there is a shift towards a more dialogic and participatory approach in science communication (Hetland, 2014; Palmer and Schibeci, 2014) although other studies suggest that researchers are still focusing on one-way communication (Nerghes et al., 2022). The findings on user-involvement in this study support the growing trend of user engagement observed throughout the research process. However, they also reveal that once the final results are published in scientific formats, science communication tends to revert to a one-way exchange.

4.3 Barriers to communication

Many hindrances are related to institutional behavior and policies. Some of the informants did not need support from the home institution to reach out with their results. However, several described being denied support by the centralized communication department, including one who was rejected even while international media was covering her research. This does not just illustrate a lack of technical support but reveals how such an episode might be interpreted as a clear negative message from the institution regarding the value placed on non-academic communication of this researchers' work. Other studies report similar findings of little support from the institution (Jensen, 2022; Jensen and Gerber, 2020; Rose et al., 2020). In fact, McElfish et al. (2019) found that researchers rarely share the results of their studies beyond scientific publication and that one of the main barriers was the lack of support by the system of the institutions. We also found that the institution was actively de-incentivizing non-academic communication practices by rewarding in-active researchers with a larger share of the highly valued academic publication points.

Additionally, although some informants had successful media cooperation experiences, several described negative consequences of skewed media exposure and journalist collaboration gone awry. However, researchers' relationship to journalists has changed in the last decade. Whereas they previously have been mostly dependent on science journalists for media coverage, today researchers have the opportunity of having more direct access to and control of their own content on communication platforms (e.g., social media) than they had in the past (Scheufele, 2013; Wilkinson et al., 2023).

4.4 Institutions' obligations and potential

As noted earlier, under Norwegian legislation, institutions such as universities are mandated to facilitate the dissemination and communication of research findings. Institutions must not only convey their societal mission to disseminate their activities through individual researchers but must also support that science communication activity. The National Act on Higher Education is vague about exactly what support for science communication should entail. "(§ 1–3, d) helping to disseminate and communicate the results of research." The same section also includes a sentence about the institutions obligation to facilitate participation in the public debate (Norge, 2024).

Kimbrell et al. describe institutional support as a multifaceted endeavor that can include providing resources, training, and platforms for scientists to engage effectively with the public and peers (Kimbrell et al., 2022) The researchers of interest in this study did not have a clear understanding of what form of institutional support they could expect and most of them did not have a clear idea of what support they would like to have.

However, support from the home institution can contribute more than merely media training or increasing message frequency or reach. Firstly, such support has the potential to increase the communication quality, which can be particularly important for health-related messages. Understanding what outcomes are important to people and creating understandable messaging that resonates with non-academics necessitates interaction with those groups. Institutions could support science communication by providing resources that facilitate increasing user-involvement in all parts of a research project. They could provide explicit training in recruiting and engaging with users for involvement, provide examples of when and how to initiate suitable involvement, establish an internal network for researchers engaged in user-involvement and science communication, and strategize how to build and maintain long term relations with relevant user groups. Having access to a specified target audience, in dialogue or even in participation, increases the efficiency of the science communication and thus the chances of knowledge uptake which would qualify as socially responsible science communication (Brownson et al., 2018; Jensen, 2022; Jensen and Gerber, 2020).

Secondly, as this study's informants suggest, the home institution showing tangible and visible interest can also be an important form of incentive for researchers to continue conducting science communication to a public audience. Institutions might also find ways to systematically encourage positive acknowledgement from peers. Study participants desired acknowledgement of the value of their communication efforts from both peers and employers. In a US survey on scientist's incentives on public communication, Rose et al. (2020) showed that many scientists do not feel that their science communication effort are valued by peers and universities, while at the same time they can be influenced by the perceived value of these efforts. Encouraging researchers' communication efforts also fits with a broader understanding of motivation in behavioral theories (Michie et al., 2011; Rose et al., 2020).

4.5 Strengths and limitations

This study's strength lies in the deliberate selection of participants who are directly relevant to the research question, focusing on their contributions to science communication with non-academic audiences. The diverse experiences and backgrounds of the participants render the findings applicable beyond the immediate context of the Faculty of Health Sciences to broader institutional contexts both within in health and other domains where researchers are engaged in similar communication efforts (Lewis et al., 2003; Malterud et al., 2016; Morse, 1999). While the study is based in Norway and provides insights into Norwegian university's communication obligations and Nordic academic culture, the themes of academic communication, institutional support, and public engagement have universal relevance. This makes the study valuable not only for understanding Nordic conditions but also for contributing to global discussions on the role of researchers in public discourse.

A larger European study from 2023 recommends conducting research into the motivations and barriers surrounding science communication at both national and local organizational levels (Wilkinson et al., 2023). Their recommendation supports the contribution of this local, Norwegian study.

This study is limited by the homogeneity in the demographic composition of the participants, as all are affiliated with the same university faculty. Despite this, their varied ages, experiences, and fields of expertise help reduce this concern, suggesting that the findings could be relevant to similar contexts outside the immediate study environment (Lewis et al., 2003). During the data analysis, we realized that interviewing both active and inactive science

communicators would have strengthened the study. This approach would have provided stronger evidence of the barriers and might have uncovered new barriers that active researchers had overcome. Another limitation of this study is its small scale, as we used only one method to reach the results. Therefore, it has been particularly important for us to draw on other relevant studies and literature to support our claims and conclusions.

A final potential limitation is that BS's prior knowledge of the participants could have impacted the data collection or introduced bias in the analysis. BS took specific precautions to prevent this: consciously taking care to conduct recruitment and interviews professionally; using the same interview guide with all participants; anonymizing the data set immediately after transcribing and using numbers to keep track of participants so that clues to "who said what" were eliminated early on. BS has also reflected that the interviews with people she knew less well were more challenging to conduct. This opens for the possibility that the slight familiarity between some participants and the interviewer may have resulted in a higher level of trust that possibly strengthened aspects of the data collection.

4.6 Implications

This study identifies barriers to science communication that highlight opportunities for institutions to enhance its practice and quality. Although all participants actively communicated, only a few attended communication courses and many expressed that they lacked the time for training. Simultaneously, institutions required them to involve users in their research projects. This suggests that universities consider allocating resources to support user-involvement throughout the entire research process. Researchers who are motivated to conduct science communication are also likely to engage in user-involvement practices as it increases the possibility for researchers to give something back to the society.

Departments should implement further institutional incentives for science communication, where researchers work and track their time allocation. Fostering a culture of peer acknowledgment for science communication activities can benefit the whole department.

Finally, the indirect incentives for those who prioritize scientific publication metrics over public communication pose a challenge that may already have a solution. The Coalition for Advancing Research Assessment (CoARA) aims to emphasize the quality, value, and impact of research over simple quantitative metrics. CoARA seeks to build trust and innovation in research evaluation systems to better reflect the complexity and societal relevance of academic contributions. As of December 2024, CoARA has 706 members globally, including the home institution of this study's participants (CoARA, 2024). If institutions implement this agreement properly, it will enhance the value of science communication, such as user-involvement, in research assessment. This underscores the importance of investing resources in institutional support for user-involvement and other activities that promote research to the public.

4.7 Future research

Previous studies indicate that science communication adhering to the deficit model is perceived as lower quality compared to approaches where researchers actively involve users. Our findings show that participants engaged users, though often not in the phase where they communicated research findings, defaulting to the deficit model. Future research should explore reasons for this and how researchers might be encouraged to engage with users in this phase of their work.

The lack of institutional incentives for science communication points to the need of continued exploration, locally as well as globally, about how institutions might better incentivize and support non-academic communication. Additionally, institutions are lacking from the theoretical models which describe only researcher and public relationships, despite the importance of their important role.

Continued research in science communication is vital for promoting open science, as it helps overcome the barriers of paywalls and specialized jargon, making scientific research more accessible and comprehensible to the broader public. By translating complex findings into more understandable terms, it ensures that valuable scientific knowledge reaches a wider audience, fostering greater public engagement and understanding.

Data availability statement

The datasets presented in this article are not readily available due to confidentiality agreements with participants. Requests to access the datasets should be directed to bente.evjen.schoning@uit.no.

Ethics statement

The studies involving humans were approved by Norwegian Agency for Shared Services in Education and Research. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

BS: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Validation, Writing – original draft, Writing – review & editing. TS: Funding acquisition, Resources, Supervision, Writing – original draft, Writing – review & editing. SR: Conceptualization, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing. CW: Conceptualization, Investigation, Methodology, Supervision, Validation, Writing – original draft, Writing – review & editing.

Funding

The author(s) declare that no financial support was received for the research and/or publication of this article.

Acknowledgments

We sincerely thank Brian Trench and Andrew Mashchak for their invaluable contributions, insightful guidance, and unwavering support, which greatly enhanced this research.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that Gen AI was used in the creation of this manuscript. Chat.uit.no was used to suggest codes when fed parts of the data. This did however, not lead to new codes that were imperative in the analysis.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fcomm.2025.1564491/full#supplementary-material

References

Andrews, E., Weaver, A., Hanley, D., Shamatha, J., and Melton, G. (2005). Scientists and public outreach: participation, motivations, and impediments. *J. Geosci. Educ.* 53, 281–293. doi: 10.5408/1089-9995-53.3.281

Baron, N. (2010). Stand up for science. *Nature* 468, 1032–1033. doi: 10.1038/4681032a

Besley, J., Dudo, A., Shupei, Y., and Lawrence, F. (2018). Understanding scientists' willingness to engage. *Sci. Commun.* 40, 559–590. doi: 10.1177/1075547018786561

Besley, J. C., Dudo, A. D., Yuan, S., and Abi Ghannam, N. (2016). Qualitative interviews with science communication trainers about communication objectives and goals. *Sci. Commun.* 38, 356–381. doi: 10.1177/1075547016645640

Braun, V., and Clarke, V. (2006). Using thematic analysis in psychology. *Qual. Res. Psychol.* 3, 77–101. doi: 10.1191/1478088706qp063oa

Brownson, R. C., Eyler, A. A., Harris, J. K., Moore, J. B., and Tabak, R. G. (2018). Getting the word out: new approaches for disseminating public health science. *J. Public Health Manag. Pract.* 24, 102–111. doi: 10.1097/phh.0000000000000673

Cargo, M., and Mercer, S. L. (2008). The value and challenges of participatory research: strengthening its practice. *Annu. Rev. Public Health* 29, 325–350. doi: 10.1146/annurev.publhealth.29.091307.083824

Carlsen, B., and Riese, H. (2016). High stakes: an interview study of researchers' motivations for and experiences of being interviewed by journalists. *Nordicom Rev.* 37, 85–99. doi: 10.1515/nor-2016-0009

Clarke, V. (2021). Thematic analysis: A practical guide. SAGE Publications Ltd. Available online at: http://digital.casalini.it/9781526417305. http://digital.casalini.it/5282292

CoARA. (2024). The agreement on reforming research assessment. Retrieved Dec 30th. Available online at: https://coara.eu/agreement/the-agreement-full-text/

Crosswaite, C., and Curtice, L. (1994). Disseminating research results—the challenge of bridging the gap between health research and health action. *Health Promot. Int.* 9, 289–296. doi: 10.1093/heapro/9.4.289

Cunningham-Erves, J., Mayo-Gamble, T., Vaughn, Y., Hawk, J., Helms, M., Barajas, C., et al. (2020). Engagement of community stakeholders to develop a framework to guide research dissemination to communities. *Health Expect.* 23, 958–968. doi: 10.1111/hex.13076

Cunningham-Erves, J., Stewart, E., Duke, J., Akohoue, S. A., Rowen, N., Lee, O., et al. (2021). Training researchers in dissemination of study results to research participants and communities. *Transl. Behav. Med.* 11, 1411–1419. doi: 10.1093/tbm/ibab023

Dudo, A. (2013). Toward a model of scientists' public communication activity: the case of biomedical researchers. *Sci. Commun.* 35, 476–501. doi: 10.1177/1075547012460845

European Commission and European Research Executive, A. (2023). Communication, dissemination & exploitation what is the difference and why they all matter. Publications Office of the European Union.

Fernández-Quijada, D. (2014). A Golden Decade. *Nordicom Rev.* 35, 135–152. doi: 10.2478/nor-2014-0009

Fischhoff, B. (2013). The sciences of science communication. *Proc. Natl. Acad. Sci.* 110, 14033–14039. doi: 10.1073/pnas.1213273110

Fischhoff, B. (2019). Evaluating science communication. *Proc. Natl. Acad. Sci.* 116, 7670–7675. doi: 10.1073/pnas.1805863115

Grand, A., Bultitude, K., Wilkinson, C., and Winfield, A. (2010). Muddying the waters or clearing the stream? Open Science as a communication medium. *Techn.* 6:9.

Grimshaw, J. M., Eccles, M. P., Lavis, J. N., Hill, S. J., and Squires, J. E. (2012). Knowledge translation of research findings. *Implement. Sci.* 7, 1–17. doi: 10.1186/1748-5908-7-50

Hetland, P. (2014). Models in science communication: formatting public engagement and expertise. *Nordic J. Sci. Technol. Stud.* 2, 5–17. doi: 10.5324/njsts.v2i2.2144

Hetland, P., Kasperowski, D., and Nielsen, K. H. (2020). Denmark, Norway and Sweden. A global perspective, eds. T. Gascoigne, B. Schiele, J. Leach, M. Riedlinger, B. V. Lewenstein, L. Massarani, et al. ANU Press. 253. doi: 10.22459/CS.2020

Hundey, E. J., Olker, J. H., Carreira, C., Daigle, R. M., Elgin, A. K., Finiguerra, M., et al. (2016). A shifting tide: recommendations for incorporating science communication into graduate training. *Limnol. Ocean. Bull.* 25, 109–116. doi: 10.1002/lob.10151

Jamieson, K. H., Kahan, D. M., and Scheufele, D. A. (2017). The Oxford handbook of the science of science communication: Oxford University Press. doi: 10.1093/oxfordhb/9780190497620.001.0001

Jensen, E. A. (2022). Developing open, reflexive and socially responsible science communication research and practice. *J. Sci. Commun.* 21:C04. doi: 10.22323/2.21040304

Jensen, E. A., and Gerber, A. (2020). Evidence-based science communication. *Front. Commun.* 4:78. doi: 10.3389/fcomm.2019.00078

Kendall-Taylor, N., and Levitt, P. (2017). Beyond hat in hand: Science advocacy is foundational for policy decisions. *Neuron J.* 94, 708–712.

Kimbrell, E., Philippe, G., and Longshore, M. C. (2022). Scientific institutions should support inclusive engagement: reflections on the AAAS Center for public engagement approach. *Front. Commun.* 6:787349. doi: 10.3389/fcomm.2021.787349

Koivumäki, K., and Wilkinson, C. (2022). "One might tweet just for money": Organisational and institutional incentives for researchers' social media communication and public engagement practices. Studies in Communication Sciences (SComS).

Lambovska, M. R., and Yordanov, K. (2020). Motivation of researchers to publish in high-quality journals: A theoretical framework. *TEM J.* 9, 188–197. doi: 10.18421/TEM91-27

Lewis, J., Ritchie, J., Ormston, R., and Morrell, G. (2003). "Generalising from qualitative research. Qualitative research practice: a guide for social science students and researchers (vol. 2). ed. J. L. Richie Londres Sage Publications.

Malterud, K., Siersma, V. D., and Guassora, A. D. (2016). Sample size in qualitative interview studies: guided by information power. *Qual. Health Res.* 26, 1753–1760. doi: 10.1177/1049732315617444

Martín-Sempere, M. J., Garzón-García, B., and Rey-Rocha, J. (2008). Scientists' motivation to communicate science and technology to the public: surveying participants at the Madrid science fair. *Public Underst. Sci.* 17, 349–367. doi: 10.1177/0963662506067660

Mayr, M. (2013). Critical perspectives on user involvement. *Int. J. Integr. Care* URN:NBN:NL:UI:10-1-114744. doi: 10.5334/ijic.1204

McElfish, P. A., Long, C. R., James, L. P., Scott, A. J., Flood-Grady, E., Kimminau, K. S., et al. (2019). Characterizing health researcher barriers to sharing results with study participants. *J. Clin. Trans. Sci.* 3, 295–301. doi: 10.1017/cts.2019.409

Michie, S., Van Stralen, M. M., and West, R. (2011). The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement. Sci.* 6, 1–12. doi: 10.1186/1748-5908-6-42

Morse, J. M. (1999). Qualitative Generalizability. *Qual. Health Res.* 9, 5–6. doi: 10.1177/104973299129121622

Nerghes, A., Mulder, B., and Lee, J.-S. (2022). Dissemination or participation? Exploring scientists' definitions and science communication goals in the Netherlands. *PLoS One* 17:e0277677. doi: 10.1371/journal.pone.0277677

Norge (2024). Lov om universiteter og høyskoler. Lovdata: Lovdata §1–3, §1–§3. Available online at: https://lovdata.no/dokument/LTI/lov/2024-03-08-9

Palmer, S. E., and Schibeci, R. A. (2014). What conceptions of science communication are espoused by science research funding bodies? *Public Underst. Sci.* 23, 511–527. doi: 10.1177/0963662512455295

Rose, K. M., Markowitz, E. M., and Brossard, D. (2020). Scientists' incentives and attitudes toward public communication. *Proc. Natl. Acad. Sci. USA* 117, 1274–1276. doi: 10.1073/pnas.1916740117

Scheufele, D. A. (2013). Communicating science in social settings. *Proceedings of the National Academy of Sciences.* 110, 14040–14047. doi: 10.1073/pnas.1213275110

Schnurbus, V., and Edvardsson, I. R. (2022). The third Mission among Nordic universities: A systematic literature review. *Scand. J. Educ. Res.* 66, 238–260. doi: 10.1080/00313831.2020.1816577

Singh, G. G., Farjalla, V. F., Chen, B., Pelling, A. E., Ceyhan, E., Dominik, M., et al. (2019). Researcher engagement in policy deemed societally beneficial yet unrewarded. *Front. Ecol. Environ.* 17, 375–382. doi: 10.1002/fee.2084

Trench, B., and Bucchi, M. (2021). Rethinking science communication as the social conversation around science. *J. Sci. Commun.* 20, 1–11. doi: 10.22323/2.20030401

UNESCO. *Open Science - making science more accessible, inclusive, and equitable for the benefit of all.* (2023). Available online at: https://www.unesco.org/en/open-science

Wilkinson, C., Milani, E., Ridgway, A., and Weitkamp, E. (2023). Motivations and deterrents in contemporary science communication: a questionnaire survey of actors in seven European countries. *Int. J. Sci. Educ., Part B* 13, 131–148. doi: 10.1080/21548455.2022.2139165