

Review

SEARCHING FOR BEST AND NEW EMERGING PRACTICES FOR INVOLVING YOUTH IN ENVIRONMENTAL HEALTH RISK COMMUNICATION AND RISK GOVERNANCE

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ABSTRACT

Background: We aimed to analyse best and new emerging practices for involving adolescents in environmental health risk communication and risk governance by a selective international literature review.

Methods: A time-restricted literature search was done as part of a scientific mission to identify existing best and new emerging practices in environmental health risk communication and risk governance involving young people. The Web of Science, PubMed and Google Scholar databases were searched for articles describing all types of studies into the evidence, experience or evaluation of capacity-building for young people and policy-makers published in English.

Database searches yielded 450 abstracts and four additional papers were identified by hand-searching references and contacting experts, nongovernmental organizations and young researchers in the field. Following screening, 25 full papers were reviewed, of which six fulfilled the inclusion criteria. Data were extracted from all included papers and synthesized into a narrative review.

Results: Only a small number of best and new emerging practices for involving youth in environmental health risk communication and risk governance for young people, policy-makers and planners in European Region have been described. Decision-making that aims to maximize the health benefits of reducing or

remediation of environmental contamination should also take wider considerations into account, including opportunities for individual health promotion activities related to improvements in the physical, social and economic environment.

Conclusion: More effort is needed to improve methodologies for promoting the involvement of young people in the policy research process. This will provide the ideal opportunity for researchers and early career investigators to develop innovative solutions that uphold the rights of young people to engage in participatory communication and governance.

Keywords: CONTAMINATION, YOUTH, INVOLVEMENT, PARTICIPATION, POLICY, RISK GOVERNANCE

INTRODUCTION

Young people¹ comprise a significant proportion of the European population (1, 2), and can therefore play an important, positive role in responding to present and future environmental contamination patterns, as well as providing societal support for health

arrangements. Although commitments were made by all Member States of the World Health Organization (WHO) European Region in the Parma Declaration on Environment and Health in 2010 (3), only about a quarter have reported meaningful youth engagement (1). It is therefore important to strengthen youth involvement in the WHO European Environment and Health Process, and Member States must demonstrate a stronger commitment to implementing the Parma Conference pledges to youth across the Region.

¹ Both adolescents (aged 10–19 years) and youths (aged 15–24 years) are referred to as young people, thus the term encompasses people aged 10–24 years (2).



It is necessary to consider population subgroups stratified by age when describing the health or risk profile of populations living in the vicinity of sites affected by environmental poisoning and contamination (1). Young people need special consideration, given their high sensitivity to environmental agents. Thus, policy-makers are faced with the ongoing challenge of making good decisions while remaining responsive to the young people affected by their decisions. Challenges associated with industrially contaminated sites in the environmental health policy arena are often technically complex and value-laden, with multiple affected groups and stakeholders operating in an atmosphere of mistrust. Another relevant issue is intergenerational justice because unsustainable waste management practices leave a toxic legacy that will adversely affect future generations.

PARTICIPATION LADDER

This review presents a framework for evaluating mechanisms designed to involve young people in environmental decision-making, risk communication and risk governance. Table 1 shows each aspired level of participation on the participation ladder, based on Arnstein's original model published in 1969 (4). In this, the direction of communication (one-way or two-way, as indicated by arrows), the forms of participation to be considered, and the associated advantages and pitfalls are shown for each rung of the participation ladder (5).

This framework distinguishes between interactive and non-interactive approaches. For instance, although surveys of the views of stakeholders (e.g. "What does the population think?") are often considered to represent participation, they are not participation in the strictest sense because the element of interaction is missing if there is no feedback to those who gave their opinions. Surveys and group interviews are tried and tested methods in social science research. They can produce very useful information and, depending on the objective of the practice or research, may be preferable to interactive methods, but taking part in a survey is not interactive participation (5). In summary, meaningful youth participation (aspired level of participation = co-decide) represents an optimal use of social resources that benefits young people, policy-makers and other stakeholders by

ensuring enriched and democratic policy-making and policy implementation.

POLICY AND PROJECT MANAGEMENT CYCLES

Policy and project management cycles are systematic processes through which environmental and social issues (as well as other public issues) are acknowledged and processed to identify solutions in staged policy-making (6). Progression through the policy cycle is intentionally iterative: policy activities are recurrent and instruments are used repetitively to effectively solve pressing problems such as active youth participation and involvement (7). Policies are formulated or revised through a process that engages stakeholders within a particular institutional context (8).

CITIZEN SCIENCE

Citizen engagement in scientific and technological projects (so-called citizen science) is widely seen to provide opportunities for education and communication to reduce the gap between laypeople and science (9). It is typically considered a win-win situation in which citizens are given the opportunity to contribute to scientific research projects designed by professional researchers. The prevailing opinion is that through their participation citizens gain an increased interest in scientific learning (10) while contributing to the development of scientific projects (11). In contrast, a less empirically explored and documented conceptualization of citizen science considers citizens as active agents capable of developing scientific research with the potential to address their needs and concerns (12). The second approach is translated into activities intended to build capacity for citizens to have a meaningful voice in scientific practice while addressing the prevailing perception that scientific research and scientists are removed from societal concerns and needs (a similar approach is used for the participation ladder) (13). As the second interpretation of citizen science can be understood as joint knowledge production, the concept represents an additional field of practice for youth participation in risk governance.

METHODS

ELIGIBILITY CRITERIA

In view of the anticipated scarcity and heterogeneity of relevant literature, the criteria used for study

selection were intentionally broad and inclusive. This time-limited review set out to include any study (of any design), review or report of evidence, experience or evaluation of capacity-building for young people and policy-makers within existing best and/or new emerging practices in environmental health risk communication and/or risk governance with young people. All papers published in English from 1996 to December 2016 were included. The regional spread was envisaged to be limited to the European Region; articles reporting on very low-income countries were excluded to maximize homogeneity in domestic contexts. However, studies of deprived areas or disadvantaged communities were included. Studies specifically examining adult populations (i.e. mean/median age of at least 18 years) or, when direct information was unavailable, clearly concerning adult populations were excluded.

SEARCH STRATEGY

The Web of Science and PubMed electronic databases (which include only peer-reviewed academic articles) were searched on 6–9 December 2016 using a combination of search terms including any of the following keywords: Contamin* AND Youth AND risk communicat* OR risk governan* OR citizen science. A total of 298 papers were identified in the first database search (on 8 December 2016). In addition, the reference lists of all included papers were hand-searched to identify relevant studies. Complementary and grey literature (academic books and non-peer-reviewed articles, including reports and web-based resources) were searched via Google Scholar using the same search terms. The second database search (on 9 December 2016) identified a further 152 publications. Four additional papers were identified via contacting key informants (experts, nongovernmental organizations and young researchers in the field), hand-searching references, and an Internet search. We also contacted young experts (official members of the European Environment and Health Youth Coalition), who contributed by sharing their opinions and perceptions of youth communication activities in the field of industrial contamination (14).

STUDY SELECTION AND DATA EXTRACTION

A total of 412 papers were excluded at the abstract review stage because they contained ineligible subject matter or were duplicates, based in low-income

countries or published in a language other than English.

For the literature search, good practice for involving young people in environmental decision-making, risk communication and risk governance was defined as meeting the interactive (i.e. two-way communication) aspired level of participation. Classical studies focusing on informing, educating and sensitizing young people or youth were considered outside the scope of this review. In addition, new and emerging studies and practices were defined as those in which the overarching objective was youth-initiated, youth-directed and youth-controlled and in which young people had acted as autonomous learners and demonstrated critical thinking about their actions and decisions regarding scientific practice and policy.

RESULTS OF THE REVIEW

The systematic search identified six papers fulfilling all inclusion criteria. Of these, four papers described good and emerging practices involving an interactive (two-way communication) aspired level of participation (listed in Table 2) through which young people actively attempted to contribute to decisions affecting their lives and to exercise their rights and duties as citizens by the use of research and policy as a tool for change. One study described an intervention aimed to explore the potential of the citizen science approach to drive transformative learning, understood as increasing the empowerment and capacity of students to think as autonomous learners of science within collaborative contexts (15). A second study used a suitable method to empirically explore, and build theory upon, the ways in which teenagers construct political action using a constructivist approach (16). The third study aimed to review the relationships between human health and the environment by implementing participatory initiatives (17), and the final study aimed to demonstrate that communities can affect policy decisions if they are organized, informed and committed to both the issue and the process (18).

Two other articles were literature reviews: the first analysed the legacy of young people's involvement in policy research (20); and the second aimed to understand how young people can channel their

TABLE 1. ACTIVITIES FOR EACH ASPIRED LEVEL OF THE PARTICIPATION SEQUENCE

Aspired level of participation	Direction of communication	Forms of participation	Advantages	Disadvantages/pitfalls
Interactive				
Co-decide	PM ↔ SH	<ul style="list-style-type: none"> · Not very common in practice · Examples: joint management of nature databases and participation in working groups · The main target group is fellow scientists 	<ul style="list-style-type: none"> · Optimal use of participants' resources · Fulfills democratic motives 	<ul style="list-style-type: none"> · In extreme cases, stakeholders determine the content of PM reports · PM risk losing control
Co-produce	PM ↔ SH	<ul style="list-style-type: none"> · Interactive scenario development · Alternation of research and participation; research-led participation process · Use of participatory methods 	<ul style="list-style-type: none"> · Increases commitment of participants · Reflective approach to co-production can make a major contribution to producing knowledge · Ideally, generates support and produces knowledge 	<ul style="list-style-type: none"> · Demands open-mindedness from the PM · PM have to commit to obtained results to some extent, which is only possible if everyone is open to this · Intensive process · Participants' choice and quality of the facilitator are key factors for success
Take advice / consult	PM ← SH	<ul style="list-style-type: none"> · Interactive workshops for: <ul style="list-style-type: none"> - defining the problem - research design - conclusions · Bilateral sessions · Review of project design and conclusions: <ul style="list-style-type: none"> - written reports - workshops · Themed workshops for knowledge production 	<ul style="list-style-type: none"> · Can result in new perspectives · Highly goal-oriented approach; can be put into action at key stages in a project 	<ul style="list-style-type: none"> · Less easy for the PM to steer the process; process can produce unintended results · Stakeholders may disagree with the framing; can lead to societal unrest · Difficult to guarantee transparency

TABLE 1. ACTIVITIES FOR EACH ASPIRED LEVEL OF THE PARTICIPATION SEQUENCE

Aspired level of participation	Direction of communication	Forms of participation	Advantages	Disadvantages/pitfalls
Non-interactive				
Listen	PM ← SH	<ul style="list-style-type: none"> · Set up feedback channels · Keep an eye on the media · Receive complaints, protest and criticism 	<ul style="list-style-type: none"> · PM get answers to questions they did not ask; prevents tunnel vision · PM are able to draw attention to problems at an early stage 	<ul style="list-style-type: none"> · Difficult to draw a line between where listening brings benefits and where it does not · Can be very time-consuming
Study	PM ← SH	<ul style="list-style-type: none"> · Surveys · Interviews · Focus groups 	<ul style="list-style-type: none"> · Many stakeholders can be reached with relatively little effort · Information can be collected in a highly targeted way 	<ul style="list-style-type: none"> · A strong framing effect may occur; other factors which were not asked about may be relevant
Inform	PM → SH	<ul style="list-style-type: none"> · Presentations 	<ul style="list-style-type: none"> · Takes relatively little time and effort 	<ul style="list-style-type: none"> · Can cause dissatisfaction among stakeholders · No opportunity to make a contribution, no real participation
No participation	PM ↔ SH	<ul style="list-style-type: none"> · None 	<ul style="list-style-type: none"> · Project receives little attention. Under certain circumstances, this may be desirable 	<ul style="list-style-type: none"> · No feedback · No utilization of external sources of information · No legitimization

PM: policy-makers; SH: stakeholders.

Sources: Netherlands Environmental Assessment Agency and Radboud University Nijmegen (5) and Hage et al. (19).

TABLE 2. SUMMARY OF INTERACTIVE PRACTICES, MAIN ACHIEVEMENTS AND LESSONS LEARNT

Study	Interactive intervention	Achievements and lessons learnt
Ruiz-Mallén et al. (15)	Students and researchers co-created a research project based on a question generated by the students	For secondary school students, it was a transformative learning experience because: <ul style="list-style-type: none"> · relationships and interactions were elective (not imposed), transparent and characterized as trust building · participants were engaged in a continuous deliberative process about the meaning and rationality of their actions, decisions, achievements or limitations while conducting research · based on the philosophy of slow science, the project was planned on a long-term, flexible basis (3–10 years) with no performance targets but some task deadlines
Coe et al. (16)	Workshop and interviews	Activists aged between 17 and 19 years constructed their political action as four different processes that involve moving from: <ul style="list-style-type: none"> · consciousness to action · personal experience to shared goals · social activities to political activities · single to multiple arenas
Huby & Adams (17)	Workshop discussion ^a	Understanding the relationships between human health and the environment was improved by implementing the following steps: <ul style="list-style-type: none"> · constructing the problems – the role of the community (or general public) in identifying a local health problem depends on recognition of a common cause for concern · identifying the contamination causes and responsibilities of citizens and stakeholders to tackle the environmental health pollution · generating important value in the process by improving communication and trust and saving time
Williams et al. (18)	Multifaceted community-based participatory research programme ^a	Achievements: <ul style="list-style-type: none"> · framework was mutually established to inform, educate and empower the community to take control of its own future · increased capacity of community members to research issues of concern and present their findings in appropriate contexts · findings have important implications for pollution prevention, risk reduction activities and strategies, and environmental health policy for other economically disadvantaged and overburdened communities

^a Study involved the participation of both young people and the general public.

creativity and dynamism to develop new ways to solve the complex problems associated with improving health in contaminated areas (21). Our results show that to formulate strategies to improve human health in contaminated situations, representatives of all stakeholder groups should be informed by the best possible scientific and medical advice. This should include improved methods of risk assessment, which may lead to recommendations to reduce human exposure via restricting emissions and remediating contamination. However, decision-making designed to maximize the health benefits of reducing or remediating environmental contamination should also take wider considerations into account, including providing opportunities for individual health promotion activities related to improvements in the physical, social and economic environment.

DISCUSSION AND CONCLUSIONS

INVOLVING YOUNG PEOPLE IN DECISION-MAKING AND SCIENTIFIC RESEARCH MATTERS

This reviews shows that more effort is needed to improve methodologies that promote the involvement of young people in the policy research process. This will provide the ideal opportunity for researchers and early career investigators to develop innovative solutions that uphold the rights of young people to engage in participatory communication and governance. It is important that policy-makers and supervisors of research projects involving contaminated sites adopt a creative approach to problem-solving, which may include the following:

- Young people can engage in research without any prior research skills training (including designing their own experiments, analysing data and reflecting on results) by applying their own scientific and political knowledge, which is meaningful within their own societal context.
- The overarching objective should be to support youth-initiated, youth-directed and youth-controlled practices so that young people can become autonomous learners and think critically about their actions and decisions regarding scientific practice and policy. Most of these skills, values and attitudes

(e.g. critical thinking, individual responsibility, ability to work as part of a team) are recognized as being important for citizens to acquire so that they can participate effectively not only in scientific research but also in their daily life activities (22).

- Policy officers and decision-makers should not judge what young people have to say about research using the same scientific and policy standards and the same criteria used to determine the credibility and trustworthiness of professional researchers; relationships and interactions should be transparent and aimed at building trust.

LACK OF EXISTING RESEARCH DATA

The literature review process showed a current lack of specific research data in the field of industrially contaminated sites and youth involvement in environmental health risk communication and risk governance. Furthermore, the few published descriptions of practices and studies are difficult to compare owing to methodological and geographical differences. For instance, many industrially contaminated sites have traditionally been located in run-down areas with high unemployment rates, so the conflict between economic interests and impacts on environmental quality and public health commonly generates great concern and controversy among residents (1). The COST² Action IS1408: Industrially Contaminated Sites and Health Network could be a platform for gathering new data and documenting the aforementioned initiatives and practices.

Thus, improving meaningful youth participation is a priority as well as sustainable and responsible investment, especially in light of the United Nations 2030 Agenda for Sustainable Development, which includes several sustainable development goals addressing environmental health issues.

YOUTH PARTICIPATION IN POLICY-MAKING, RISK GOVERNANCE AND COMMUNICATION: A MIXED PICTURE

Through publishing the *Rules for participation in and implementation of COST activities* (23), COST aims to encourage the participation of young talented researchers representing the next generation of

² European Cooperation in Science and Technology.

leaders in science and technology, and to promote work opportunities for early career investigators (24). It is essential to provide involvement opportunities and visibility to young people participating in processes that focus on both treating industrially contaminated sites and promoting health. This review highlights that, owing to their creativity and dynamism, young people are capable of providing new perspectives to old problems. Moreover, their meaningful participation raises awareness of the responsibility of young people towards the environment as future decision-makers and inhabitants of the planet, thus familiarizing them with the processes of designing and implementing research programmes and policies related to health and the environment (14). This review also identified some of the challenges young people face when engaging in the research and policy process. Their efforts to initiate these processes were not always fruitful because, as their political action gained in complexity, young people faced greater constraints in challenging power due to age-based exclusion, state-centred definitions of politics, and a lack of interest in youth demands from adults (20).

Practices implemented in Sweden reported a barrier towards a specific age group: students aged 16–19 years old usually fell outside the scope of civil society organizations, which classified this age group as adults or young adults (16).

RECOMMENDATIONS

- Expand meaningful youth participation in national and international decision-making and policy development processes related to the environment and health in all WHO European Member States.
- Promote formal and non-formal education programmes on environmental health issues at every level of educational facility for raising awareness among children and young people in the WHO European Region.

Acknowledgements: This literature review was planned and implemented in December 2016 at the University of Antwerp as part of the short-term scientific mission within the framework of the COST Action IS1408: Industrially Contaminated Sites and Health Network. The authors would like to extend

their sincerest thanks to Bert Morrens and Dries Coertjens and the University of Antwerp for hosting the mission, and to all of the young people who participated in the literature review by sharing their practices and perceptions related to industrially contaminated sites.

Sources of funding: None declared.

Conflicts of interest: None declared.

Disclaimer: The authors alone are responsible for the views expressed in this publication and they do not necessarily represent the decisions or policies of the World Health Organization.

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