

EDUCATING AND TRAINING IN RESEARCH INTEGRITY (RI): A STUDY ON THE PERCEPTIONS AND EXPERIENCES OF EARLY CAREER RESEARCHERS ATTENDING AN INSTITUTIONAL RI COURSE

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Introduction

Research integrity (RI) is defined as adherence to ethical principles and values, deontological duties, and professional standards necessary for responsible and proper conduct in the pursuit of scientific research and related activities (CNR, 2022; Poff, 2014). The ethical principles have been summarised in the European Code of Conduct for Research Integrity (ECCRI) published by ALLEA (2017), which also includes the notion of Research Misconduct (RM).

The relevance of RI issues has been internationally recognised in recent years, and several initiatives have been promoted to raise awareness among the scientific community, policy makers and the general public. However, a widespread internalisation of the principles

contained in the European Code of Conduct for Research Integrity seems not to have been achieved yet, also due to the lack of specific training of early career researchers.

Early training on RI, especially for new researchers, is of fundamental importance to help understanding ethical principles of good conduct in research. The main aim of this study was to assess the effectiveness of an online course on methodology, ethics, and integrity in academic research and map the perceptions and attitudes about RI and RM in a sample of early career researchers. The study was performed in the context of a program aimed at including RI related teaching among essential components of a PhD programme.

Materials and Methods

An intensive training course was provided by the University of Insubria on behalf of the VIRT2UE project, a train-the-trainer program for RI trainers and researchers (grant agreement N.787580), as part of a PhD programme and open to any interested researchers.

The course was divided in two sessions: the first session was carried out online independently by each participant and consisted in online

modules and materials provided by the Embassy of Good Science website (https://embassy.science/wiki/Main_Page); the second session consisted of a face-to-face online training, delivered over two consecutive days by three trainers.

A questionnaire was built upon the revised version of the Scientific Misconduct Questionnaire (Broome et al., 2005; Mabou

Tagne et al., 2020) and adapted to an online course with a limited number of participants, with the integration of RI concepts. It consists of five macro investigation areas which allow collection of data on respondents' preconceptions and experiences, specifically concerning: research and ethical climate at the work environment, perceived prevalence of RM in the workplace, attitude and beliefs about RI and RM, behavioural influences on RI and RM, and personal involvement in RM.

Results

The number of trainees attending the course was 16 and collected data shows an acquired awareness about RI and RM attitude and beliefs pre- and post-course. A general lack of knowledge about RI and RM by our participants, at an early stage of their research career, represented a major challenge in developing the course. Specifically, participants who rated as high their understanding of the rules and procedures related to RM significantly increased after the course (pre: 37.5% - post: 61.5%).

Discussion

The course adopted a virtue-based approach to RI, in accordance with the principles outlined in the ECCRI. Participants received an overview of RI and RM issues, and practical real-world examples of ethical dilemmas were discussed to stimulate reflection and insight. Participants were strongly encouraged to actively contribute to the course, by sharing personal opinions and ideas.

Submitting a questionnaire at the beginning of the course allowed the assessment of knowledge and awareness about RI issues among the course participants, differing in age, type of educational background and research experience. Re-administration of the questionnaire once the course was over, helped

The questionnaire submission was made available before and after the course on a voluntary basis. The questionnaire was provided via the Microsoft Forms application, collected data was processed in anonymous and aggregate form with Microsoft Excel and analysed through a descriptive approach by comparing the participants' response percentages and cross-checking them between the two administered questionnaires.

Furthermore, participants agreed on the lack of awareness among researchers regarding the amount of misconduct (pre: 43.8% - post: 69.2%) and, in their opinion, the lack of research ethics consultation services within institutions strongly influences RM (pre: 12.5% - post: 61.5%). After the course, respondents agreed that all professional education programmes should include information about standards for research ethics.

in assessing the impact of the course on participants' responsiveness.

Based on collected data and direct feedback from participants, it seems possible to argue that, even among early career researchers, a certain degree of awareness about the importance of RI is present. The integration of RI topics into their training is also felt as important.

A further relevant finding is the value acknowledged by early career researchers to the possibility of sharing with their peers and superiors any ethical dilemmas which may arise in research. In this regard, the creation of a working environment that fosters awareness on RI among researchers seems to be crucial. The course represents an example of a first

experience of RI training provided in a doctoral programme at our university, and the small

sample reflects the actual number of students enrolled.

Conclusion

Institutions, especially academia, should introduce specific RI training for researchers at a very early stage of their careers, including the institution of research ethics consultation services to support all researchers. Senior scientists should be responsible for promoting and integrating RI into their teaching and research practices, and for stimulating early career researchers to engage in peer-to-peer dialogue in order to develop good practices based on RI principles consistent with the ECCRI. This course was very positively evaluated by participants, who actively contributed to

discussions on various RI related issues, and encourage the implementation of this training tool by making it an integral part of the PhD programme. Nevertheless, despite the course, about 30-40% of participants still failed to understand RM and its occurrence. We hypothesize that the online format may have affected its effectiveness and/or that more time should be allowed to some participants to fully grab the principles and practices which are at the course core.

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