the embassy of good science
Training for research integrity and research ethics: a scoping review

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Presentation by Ružica Tokalić, MD

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Overview

1. Background
2. What we did
3. What we found
4. What next?
Background
Background

EnTIRE project

- Mapping Normative Frameworks of ETHics and Integrity of Research (EnTIRE)
- H2020 project
- An online platform that makes the normative framework governing RE+RI easily accessible: Embassy of Good Science
- Support application in research and evaluation
- Involve all stakeholders in a participatory way
Background

Work package 4

• Collect materials on research ethics (RE) and research integrity (RI) committees, experts, and training opportunities

• Create Country Report Cards to synthesize information on structures, processes and outcomes for RE and RI
Background

Real background

- Misconduct
- ~2% admit FFP, ~34% admit QRP\(^1\)
- ~14% perceived FFP in others, ~72% perceived QRP in others\(^1\)
- Handling of one case ~525,000$\(^2\)
- Estimated cost per ORI cases a year: > $110 million\(^2\)
- Indirect damage?

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Background

Research ethics (RE): critical study of the moral problems associated with or that arise in the course of pursuing research

Research integrity (RI): the quality of possessing and steadfastly adhering to high moral principles and professional standards, as outlined by professional organizations, research institutions and, when relevant, the government and public

Responsible conduct of research (RCR): conducting research in ways that fulfill the professional responsibilities of researchers, as defined by their professional organizations, the institutions for which they work and, when relevant, the government and public

• To counter these issues, a lot of expectation has been put onto training in RE and RI

• There is limited evidence for its effectiveness

• In this scoping review, we aimed to assess the current state of education and training of RE, RI, and RCR in different research areas

What we did
What we did

Methods

• Joanna Briggs methodology for scoping reviews\(^1\)

• A protocol and a search strategy were developed in collaboration with a librarian experienced in systematic reviews

• A systematic search of databases PubMed, Scopus, and Web of Science, as well as RRI Tools, Netherlands Research Integrity Network, and grey literature (base-search.net, opengrey.org, science.gov) for training opportunities

What we did

Search strategy, inclusion and exclusion criteria

• Publications considered relevant for inclusion were journal articles which describe and/or evaluate interventions aimed at improvement of RE and RI attitudes and/or behaviour

• We considered any kind of course, face-to-face or online, methodological approach or a model aimed at improving RE and RI practices to be an intervention

• Published after 1980

• No language, geographical or limitations for intervention, participants regarding their levels of education, and areas of research
What we did

Data extraction

- Authors, country of origin, year of publication
- Research area, target population
- Focus on RE or RI or RCR, RE/RI topics addressed
- Methods, sample size, educational approach, delivery mode and duration
- Outcome assessment, key findings, identified gaps and availability of materials
What we found
Records identified through database searching (n = 59,207)
Records after duplicates removed (n = 55,147)
Records screened (n = 55,147)
Full-text articles assessed for eligibility (n = 266)
Studies included in qualitative synthesis (n = 99)

Additional records identified through other sources (n = 42)
Records excluded (n = 54,881)
Full-text articles excluded, with reasons (n = 167)

What we found
## What we found

### Results?

<table>
<thead>
<tr>
<th>Country of development</th>
<th>Count (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>69 (69.7%)</td>
</tr>
<tr>
<td>Europe</td>
<td>10 (10.1%)</td>
</tr>
<tr>
<td>Australia</td>
<td>5 (5.1%)</td>
</tr>
<tr>
<td>South Korea</td>
<td>3 (3.0%)</td>
</tr>
<tr>
<td>India</td>
<td>3 (3.0%)</td>
</tr>
<tr>
<td>Canada</td>
<td>2 (2.0%)</td>
</tr>
<tr>
<td>Egypt</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Peru</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>South Africa</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Singapore</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Cuba</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>China</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Brasil</td>
<td>1 (1%)</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Time of publication</th>
<th>Count (%)</th>
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<tbody>
<tr>
<td>&gt;2009</td>
<td>69 (69.7%)</td>
</tr>
<tr>
<td>1999-2008</td>
<td>22 (22.2%)</td>
</tr>
<tr>
<td>&lt;1998</td>
<td>8 (8.1%)</td>
</tr>
</tbody>
</table>
### What we found

**Results?**

<table>
<thead>
<tr>
<th>Research area</th>
<th>Count(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomedicine and health</td>
<td>41 (41.4%)</td>
</tr>
<tr>
<td>Social sciences</td>
<td>15 (15.2%)</td>
</tr>
<tr>
<td>Engineering and technology</td>
<td>13 (13.1%)</td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>11 (11.1%)</td>
</tr>
<tr>
<td>Natural sciences</td>
<td>6 (6.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Target audience</th>
<th>Count(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only students</td>
<td>54 (54.5%)</td>
</tr>
<tr>
<td>Only trainers</td>
<td>14 (14.14%)</td>
</tr>
<tr>
<td>Mixed audience</td>
<td>9 (9.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RE, RI, RCR</th>
<th>Count(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RE</td>
<td>59 (59.6%)</td>
</tr>
<tr>
<td>RI</td>
<td>5 (5.1%)</td>
</tr>
<tr>
<td>RCR</td>
<td>25 (25.3%)</td>
</tr>
<tr>
<td>RE+RI</td>
<td>3 (3.0%)</td>
</tr>
<tr>
<td>RE+RCR</td>
<td>3 (3.0%)</td>
</tr>
<tr>
<td>RI+RCR</td>
<td>0 (0.0%)</td>
</tr>
</tbody>
</table>
Wordcloud of the topics covered in the educational interventions
What we found

Results?

• Educational approach: majority of the interventions were face to face, and included case studies, role-play and scenarios, in combination with lectures, in duration of 1 week or less

• Less frequent: blended learning, cards, fish bowl technique, group and peer mentoring
What we found

Measured outcomes: from essay based evaluations, knowledge tests and formative evaluation, to surveys analysing satisfaction with the course

Diverse outcomes, no standardized measurements

Key findings: interventions mostly had positive evaluation results, but emphasized the need for better defined goals of RE and RI education and objective, structured ways of evaluation and follow up
What next?
What we found

Summary

- Focus on RE and RCR
- Very few consider the concepts of RI, despite the 2014 Singapore Statement on Research Integrity
- Traditional lectures remain a big part of the course designs
- More focus is being put on less traditional topics, such as time management and poor communication
What next?
What to do with this?

- Lack of comprehensive and measurable outcomes
- Difficult to assess how should an effective education in RE/RI/RCR look, and if it can perform in terms of misconduct prevention
- Future research and education should focus on clear outcomes and sustainable ways of measuring them
Thank you!
Any questions?

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