

Research integrity of PhD-candidates in the Scandinavian Countries. Results from 6 years of surveys



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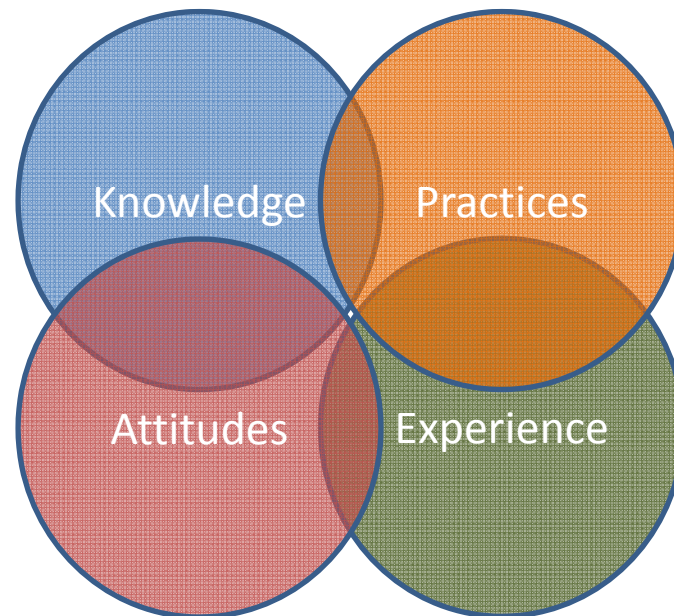
Background

Lack of knowledge about attitudes. knowledge of and practices of research integrity in general and in the Scandinavian countries in particular.



Method (Design)

- A three-page questionnaire combining a survey developed at the
 - Department of Medical Ethics in Lund. Sweden with a
 - Survey developed by Kalichman (USA) was applied.
- Four parts:
 - Knowledge
 - Attitudes
 - Practices
 - Experiences



Method

- The participants in the study were post-graduate students being enrolled in the PhD-program at the Faculty of Medicine at the University of Oslo in Norway
- 2010 – 2018
- Questions about **facts** were scored as Yes / No / Uncertain.
- Questions about **attitudes** were scored by Likert-type scale was used for (strongly disagree / disagree / disagree or disagree / agree / strongly agree).
- Analysis
 - Descriptive statistics
 - Non-parametric methods

Comparison



- Results were compared to results from

- Norway

- Oslo
- Bergen
- Trondheim
- Tromsø

Hofmann B, Myhr AI, Holm S. Scientific dishonesty--a nationwide survey of doctoral students in Norway. BMC medical ethics 2013; 14:3.

- Sweden

- Karolinska Institutet

Hofmann B, Helgesson G, Juth N, Holm S. Scientific Dishonesty: A Survey of Doctoral Students at the Major Medical Faculties in Sweden and Norway. JERHRE 2015; 10:380-8

- Denmark

- University of Southern Denmark

Jensen LB, Kyvik KO, Leth-Larsen R, Eriksen MB. Research integrity among PhD students within clinical research at the University of Southern Denmark. Danish medical journal 2018; 65.

Good recruitment

Year: Questions	Oslo 2010	Oslo 2014	Oslo 2015	Oslo 2016	Oslo 2017	Oslo 2018
Returned/distributed (n)	78/87	96/107 [†]	77/98	79/99	87/104	67/99
Response rate (%)	89.7	88.8	78.6	79.8	83.7	67.7
Undergraduate studies in country of study. n (%)	56 (69)	55 (59)	37 (48)	41 (66)	60 (69.8)	46 (70.8)
Doing Clinical/Basic/Other research (n)	31/30/16	55/28/11	45/18/10	36/17/7	47/22/14	45/11/9
Years of experience: <1yr/1-2yrs/>2yrs	51/17/10	75/17/3	57/13/4	42/16/3	68/14/3	49/10/6
Lectures or courses in science ethics as part of undergraduate studies (Yes/No/I do not remember)	56/35/7	71/15/8	53/18/4	40/11/10	59/17/9	41/15/8

Good recruitment

Questions	Site:	Oslo 2010 - 2018	Denmark (SDU) 2017	Sweden (KI) 2014	All in Norway 2010	All in Sweden 2010
Returned/distributed (n)		484/594	165/329	105/115	189/262	134/230
Response rate (%)		81.4	50.0%	91.3	72.1	58.3
Undergraduate studies in country of study. n (%)		295 (61.0)	155 (93.9)	52 (50)	137 (72)	–
Doing Clinical/ Basic/ Other research (n)		259/126/67	133/14/18	61/33/10	85/54/48	–
Years of experience: <1yr / 1-2yrs / >2yrs		342/89/29	47/53/65	48/41/16	118/50/21	–
Lectures or courses in science ethics as part of undergraduate studies (Yes/No/I do not remember)		320/111/46	104/24/39	60/24/20	124/66/20	–

Results Knowledge

Have you nationally or internationally heard about anyone who during the past 12 months has: (percent answering yes)

Question	Oslo 2010-18	Denmark 2017	Sweden (KI) 2014	All Norway 2013	All Sweden 2010
Fabricated data?	28.2	21	27.6	29.2	29
Falsified data?	24.2	17.3	29.8	23.8	31.8
Plagiarised data?	19.8	11.1	14.4	21.1	24.2
Plagiarised publications, in whole or in part?	20	20.4	16.3	19.7	—
N	244	165	105	189	134

Main message: about one quarter know about FFP the passed year

Results Knowledge

Do you know about anyone at your department who during the last 12 months has: (percent answering yes)

Question	Oslo 2010-18	Denmark 2017	Sweden (KI) 2014	All Norway 2013	All Sweden 2010
Fabricated data?	0.8 ^a	0	0	0.5	0
Falsified data?	1.3	0	0	0.5	5.4
Plagiarised (in any way)	1.6 ^b	0	1.9	0.5	0
Presented results in some other misleading way?	4.3 ^c	0	2.1	—	—
N	376	165	105	189	134

^a. The difference between the various years is statistically significant (Pearson Chi-Square, 0.03)

^b. The difference between the various years is statistically significant (Pearson Chi-Square, 0.002)

^c. The difference between the various years is statistically significant (Pearson Chi-Square, 0.001)

Main message: some now about FFP at own department the passed year

Results Knowledge

Awareness about

- Money
- FFP

Does your department have a written policy about:

(percent answering yes)

Question	Oslo 2010-18	Denmark 2017	Sweden (KI) 2014	All Norway 2013	All Sweden 2010
Application for funds?	35.4	23.6	35.6	46	40.8
Use of funds?	36.7	35	37.9	47.1	42.3
Changes in design/method?	18.4	8.3	31.7	31.7	52.7
Changes in results?	17.8	11.5	25	30.6	56.9
Fabrication of data?	32.9	17.8	35	42.5	55.4
Falsification of data?	33.3	18.5	33	42.5	56.2
Handling of scientific authorship?	28.4	19.1	32.7	40.6	49.2
Plagiarism?	32.5	18.5	43.7	41.7	50.4
Duplicate publication?	27.6	10.8	28.8	37.4	53.8
Harassment?	26.9	23.6	59.2	37.4	56.2
N	376	165	105	189	134

Main message: about one third know about their dept's written policy

Results Attitudes (Percent Agree or Strongly Agree)

Question	Oslo 2010-18	Denmark 2017	Sweden (KI) 2014	All Norway 2013
It is never appropriate to report experimental data that have been created without actually having conducted the experiment.	88.8	94.1	86.5	90.3
It is never appropriate to try a variety of different methods of analysis until one is found that yields a result that is statistically significant.	60.8 ^a	84.3	54.9	62
If you were confident of your findings, it is acceptable to selectively omit contradictory results to expedite publication.	13.8	2.7	15.8	12.8
If you were confident of your findings, it is acceptable to falsify or fabricate data to expedite publication.	10.8	2.7	13.7	10.3
It is more important that data reporting be completely truthful in a publication than in a grant application.	35	53.6	46.6	29.3
If you witness someone committing research misconduct, you have an ethical obligation to act.	88.2	88.2	78.6	87.1
If fabricated data are discovered in a published paper, all co-authors must equally share in the blame.	50.9	45.7	53.4	45.7
If fabricated data are discovered in a published paper, all co-authors must receive the same punishment.	29.4 ^b	22.9	28.2	28.8
N	453	165	105	189

Main message: several attitudes are not in line with good RI

Results Practice

Have you yourself during the last 12 months ever:

(percent answering yes)

Question	Oslo 2010-18	Denmark 2017	Sweden (KI) 2014	All Norway 2013	All Sweden 2010
Fabricated data?	0	0	0	0	1.5
Falsified data?	0.2	0	0	0	1.5
Plagiarised data?	0	0	0	0	0
Plagiarised publications. in whole or in part?	0.4	0	0	0	—
Presented results in some other misleading way	0.6	0	1.0	—	—
N	244	165	105	189	134

Main message: Few but some admit FFP

Results Practice (Oslo 2016, 2017, 2018, N=207)

In your work as a scientist, have you engaged in any of the following behaviors in the last three years?	Percent Once or More
To confirm a hypothesis, selectively deleted or changing data after performing data analysis?	2,9
Deleted data before performing data analysis?	5,3
Used phrases or ideas of others without their permission?	9
Used/ing phrases or ideas of others without citation?	8,6
Turned a blind eye to colleagues' use of flawed data or questionable interpretation of data?	12,1
Modified the results or conclusions of a study under pressure from an organization that (co-) funded the research?	4,3
Not published (part of) the results of a study?	9,3
Added one or more authors to a report who did not qualify for authorship (honorary author)?	18,8
Selectively modified data after performing data analysis to confirm a hypothesis?	4,9
Reported/ing a downwardly rounded p value (e.g. reporting that a p value of .054 is less than .05)?	2,9
Reported an unexpected finding as having been hypothesized from the start?	9,2
Decided whether to exclude data after looking at the impact of doing so on the results?	7,2
Decided to collect more data after seeing that the results were almost statistically significant?	12,1
Stopped collecting data earlier than planned because the result at hand already reached statistical significance without formal stopping rules?	3,4
Spread results over more papers than needed to publish more papers ('salami slicing')?	3,8

Results Experience

Have you yourself during the last 12 months been the exposed to pressure concerning: (percent answering yes)

Question	Oslo 2010-18	Denmark 2017	Sweden (KI) 2014	All Norway 2013	All Sweden 2010
Fabricate data?	0.2	0	0	0.5	0
Falsify data?	0.7	0.6	0	0.5	5.4
Plagiarise data?	0.4	0	0	0.5	0
Plagiarise publications, in whole or in part?	0.2	0	1.9	0	—
Present results in some other misleading way?	1.4	2.5	0	0.5	0
N	244	165	105	189	134

Main message: Few but some have been subject to pressure of FFP

Results Experience

Have you during the last 12 months been exposed to unethical pressure concerning: (percent answering yes)

Question	Oslo 2010-18	Denmark 2017	Sweden (KI) 2014	All Norway 2013	All Sweden 2010
Inclusion or order of authors?	12.50	22.20	14.3	10.6	8.5
Design/method?	1.10	4.40	3.8	2.7	3.1
Analysis?	3.00	1.90	11.0	—	—
Results?	1.10	1.90	1.0	2.7	0.8
N	459	165	105	189	134

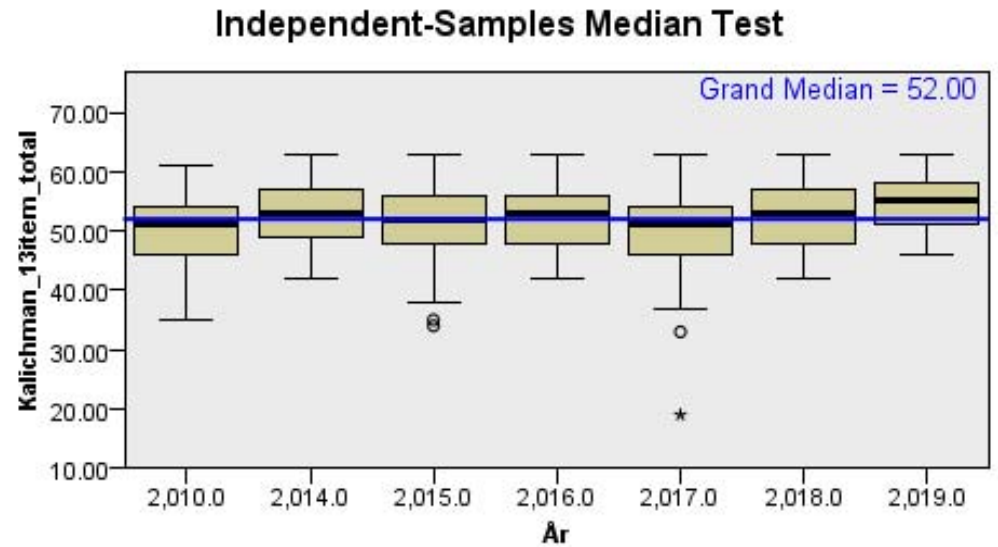
Main message: Some have been subject to pressure of authorship +

Is it getting better or worse?

Answer:

- There are very few changes (that are statistically significant)
- There are no statistically significant trends over time

Trends in Attitudes



Total N	436
Median	52.000
Test Statistic	12.606
Degrees of Freedom	6
Asymptotic Sig. (2-sided test)	.050

Do prior courses in ethics influence the results?



- Answer: NO.
- Chi-Square test gave no significant differences.

Discussion

- Results are very stable
- Results are in line with what is found in the literature.
- Increased knowledge and awareness does not seem to reduce the practice or knowledge about scientific dishonesty.
 - This may be because awareness about RI may not be increased amongst the role models for PhDs.

Conclusion

- One quarter of PhD-candidates have heard about serious kinds of scientific misconduct (FFP) the last 12 months.
- 1-2% know about someone at their department who during the last 12 months had committed serious scientific misconduct.
- Few (<1%) had themselves engaged in FFP.
- Few (<1%) felt pressure to commit FFP
- More than 10% of the PhD-candidates felt pressure with respect to authorship.
- PhDs still appear to accept actions that are considered to be misconduct in the literature, for example
 - Repeated analysis to obtain statistical significant results.
 - Omitting data to expedite publication

Take home message

- Severe misconduct is rarely reported in the surveys in the Scandinavian countries.
- Knowledge about misconduct is more prevalent.
- Increased attention does not seem to have altered extension, attitudes, experiences, or practices with respect to misconduct.
- One reason for this may be that role models are hard to reach.



Thank you for your attention!
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