Trends in Participation in Population-Based Case-Control Studies of Occupational Risk Factors

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Background

- Low participation rate may lead to selection bias and threaten the internal validity of epidemiological studies.
- There has been an increasing concern that participation in case-control studies is declining, and this trend was consistently observed in the previous studies[1-4].
- Several studies have studied the reasons for non-participation in epidemiological studies and have tried to address this issue using methods such as information sessions, reminder follow-ups, and financial incentives[5-7].
- However, case-control studies of occupational risk factors have not been looked at specifically in the past.
- The purpose of this study was to examine the trend in subject participation rates in case-control studies of occupational risk factors published in the past 26 years.
- The null-hypothesis of this study was that subject participation rates in case-control studies of occupational risk factors did not change over the past 26 years.

Methods

- Case-control studies published in the *American Journal of Epidemiology (AJE), Occupational and Environmental Medicine (OEM), and Scandinavian Journal of Work, Environment & health (SJWEH)* Between 1990 and 2016 were reviewed (except for OEM, where only issues between 1994 to 2016 were available via Ryerson University Library & Archives).
- The inclusion criteria were:
    1. The exposure of interest was an occupational exposure.
    2. The outcome was a chronic disease.
    3. The researchers had some means of communication with the participants (ie: interviews, telephone, or questionnaire).
    4. The study contained at least 50 cases.
- The exclusion criteria were:
    1. Para-occupational exposures
    2. Studies based on data collection already counted in the analysis
- Regression analysis was used to describe the association between participation rate and median year of data collection.

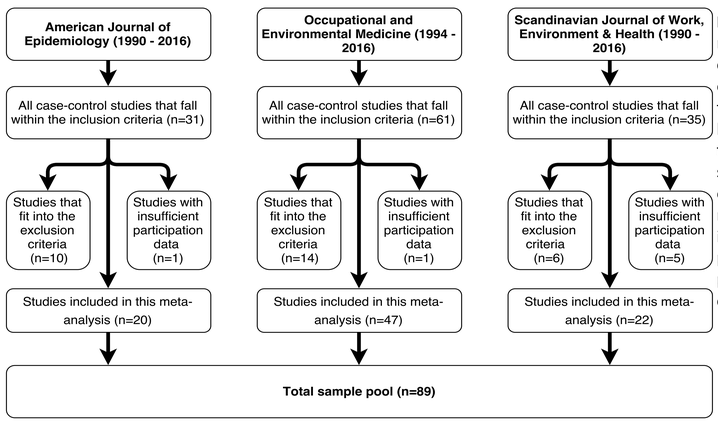

Figure 1. Sample recruitment flow-chart. Studies were excluded if it fits into the exclusion criteria listed in methods. A total of 7 eligible studies were excluded from this meta-analysis due to insufficient info provided to calculate participation rate of cases and controls.

Results

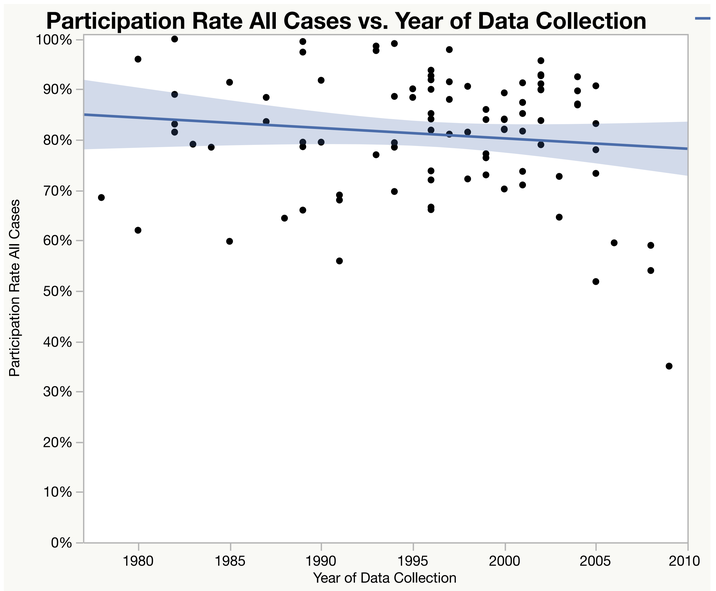

Figure 2. Reported participation rates for cases according to median year of data collection. The average reported participation rate was 80.7% (standard deviation 12.1%). Regression coefficient = -0.21% difference per year (p=0.233).

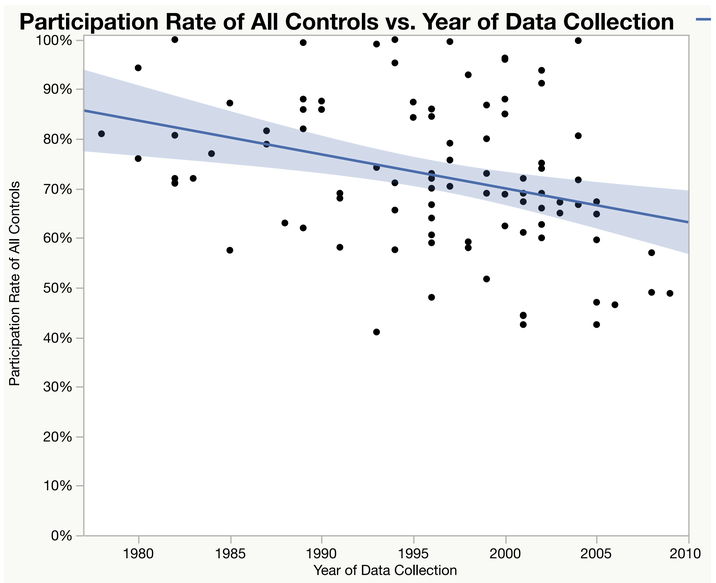

Figure 3. Reported participation rates for controls according to median year of data collection. The average reported participation rate was 72.2% (standard deviation 15.2%). Regression coefficient = -0.68% difference per year (p=0.001).

Results Cont'd

Table 1. Descriptive Statistics of the studies.

	No. of Studies
Journal Title	
American Journal of Epidemiology	20 (22.5%)
Occupational and Environmental Medicine	47 (52.8%)
Scandinavian Journal of Work, Environment & Health	22 (24.7%)
Year of Data Collection	
Before 1990	17 (19.1%)
1990-1999	37 (41.6%)
2000-2009	31 (34.8%)
Unreported	4 (3.5%)
Outcome of Occupational Exposure	
Cancer	70 (78.7%)
Non-cancer	19 (21.3%)
Location of Study	
Europe	57 (64.0%)
North America	29 (32.6%)
Oceania	3 (3.4%)
Means of Communication	
Face to face interview	60 (67.4%)
Telephone	5 (5.6%)
Mailed questionnaire	18 (20.2%)
Mixed	5 (5.6%)
Unreported	1 (1.1%)

Discussion and Conclusion

- There has been a slight decrease of cases participation rates of -0.21% per year.
- There has been a statistically significant decrease of controls participation rates of -0.68% each year.
- The results from this study agree with previous studies[1-4], with the exception of Olson, where a yearly increase in participation rates was observed for cases only.
- Mean participation rate was higher for cases than controls, and participation rates of controls had a higher rate of decline than cases.
- The above phenomenon may be due to the fact that cases tend to care more about research studies on occupational hazards that they were exposed to, and thus more likely to participate.
- However, it must be considered that the method of calculating participation rates may differ among studies and this may affect the accuracy of the results (ie: one study may consider deceased cases as non-participants, while another study may exclude deceased cases from their participation rate calculations).
- Non-reporting of participation was observed in 7 studies during data collection and such practice should be strongly discouraged as pointed out by *Morton et al.* that detailed reporting of participation data is important for epidemiological studies to distinguish between refusals and non-contacts.

References

1. Bunin, G. R., Spector, L. G., Olshan, A. F., Robison, L. L., Roesler, M., Grufferman, S., et al. (2007). Secular Trends in Response Rates for Controls Selected by Random Digit Dialing in Childhood Cancer Studies: A Report from the Children's Oncology Group. American Journal of Epidemiology, 166(1), 109-116.
2. Morton, L. M., Cahill, J., & Hartge, P. (2006). Reporting Participation in Epidemiologic Studies: A Survey of Practice. American Journal of Epidemiology, 163(3), 197-203.
3. Olson, S. H. (2001). Reported Participation in Case-Control Studies: Changes over Time. American Journal of Epidemiology, 154(6), 574-581.
4. Gorey, K. M., & Trevisan M. (1998). Secular Trends in the United States Black/White Hypertension Prevalence Ratio: Potential Impact of Diminishing Response Rates. American Journal of Epidemiology, 147(2), 95-99.
5. Bauman, A., Phongsavan, P., Cowle, A., Banks, E., Jorm, L., Rogers, K., . . . Grunseit, A. (2016). Maximising follow-up participation rates in a large scale 45 and up study in australia. Emerging Themes in Epidemiology, 13 doi: http://dx.doi.org/10.1186/s12982-016-0046-y
6. Glenny, A.-M., Worthington, H. V., Milsom, K. M., Rooney, E., & Tickle, M. (2013). Strategies for maximizing consent rates for child dental health surveys: a randomised controlled trial. BMC Medical Research Methodology, 13(1 %@ 1471-2288), 108.
7. Granero Perez, R., Ezpeleta, L., & Domenech, J.M. (2007). Features associated with the non-participation and drop out by socially-at-risk children and adolescents in mental-health epidemiological studies. Social Psychiatry and Psychiatric Epidemiology, 42(3), 251-258.

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