Institution: University of Stirling

Unit of Assessment: A3 Allied Health Professions, Dentistry, Nursing and Pharmacy

Title of case study: Work-related cancers: burdens, costs and prevention

1. Summary of the impact

The research on the scale and costs of occupational cancers – especially asbestos-related cancers (ARCs) and breast cancers - was translated into policy and practice on prevention and support for patients by a range of global and national civil society bodies, governments and policy makers. An ARCs costs toolbox was prepared for WHO Europe. Other papers contributed to Scottish policy changes on patient cancer drug treatments and improved benefits advice for patients through organisations like Macmillan Scotland. International trade secretariats and health professional organisations, reaching millions of people, drew on the research, developing new global policies on occupational cancer.

2. Underpinning research

The original multi-disciplinary and mixed methods research on the scale of occupational and environmental cancer and its prevention focussed on the interface between science, policy and practice drawing on epidemiological and broader occupational health work done in the school since the early 2000s (See Watterson et al 2006, Brophy et al 2006, Brophy et al 2012). The research identifies occupational causes of cancer especially asbestos-related cancers and breast cancer and related economic costs documenting occupational activity, range and level of exposures to carcinogens, and collecting new data. Established and innovative research methods including mapping and participatory action research were also used to engage policy makers and communities in social and environmental justice issues and then adopted by them. The comprehensiveness of various cancer data bases were analysed and costs of failures to prevent occupational cancers assessed; an under-researched field even in 2013. Two PhDs (Brophy and Keith) were completed on the subject at Stirling in the early 2000s looking at occupational histories, breast cancer in women workers and mesothelioma and lung cancer in foundry workers. The team, lead by Stirling, included Canadian, American, English and Scottish researchers used Breast Cancer charity funding and later WHO funds on asbestos diseases. Since 2006, further papers have explored the surveillance, recognition, costs and prescription of specific occupational cancers and carcinogens in the UK and beyond. Larger studies were conducted building on the original data sets collected in the 2000s (for example see Brophy et al 2012).

The research drew on conventional and lay epidemiology in the field and health economics to track, record and cost diseases, and prevention measures available (O'Neill et al 2007). With Macmillan and others, additional research was completed on the wider social and economic problems faced by those who contract cancer at work or work with cancer (Watterson 2006 et al and Watterson et al 2008). The reach and significance of the research has been wide and geographically diffuse on civil society and practitioners over a 15 year period including stimulating renewed interest elsewhere leading to re-examinations in Australia and the USA (Watterson et al 2008). The research related to early upstream interventions preventing exposures and methods to engage governments, practitioners and the public at large in identifying means of reducing exposures and assessing costs. This type of research benefits individuals' health, services and government socially and economically and addressed the needs of vulnerable populations through achieving greater equity with other groups where cancer rates are lower (http://www.hazards.org/cancer).

Dissemination of the research findings accessible not only to scientists and government officials but to groups exposed to carcinogens in workplaces and to civil society bodies that represented them – was in itself an important and integrated part of the research strand's activity (BWI) through workshops, popular magazines, civil society newsletters, web, print and radio and TV media as well as the usual conferences and workshops.

Research dates/team: 2003-2013. Jim Brophy (Canada), Tommy Gorman (also from Macmillan UK), Margaret Keith (Canada), Rory O'Neil, Simon Pickvance, Jawad Qasrawi, Andrew Watterson

3. References to the research

1. Watterson A, Gorman T., Malcolm C., Robinson M., Beck M. (2006).The economic costs of health service treatments for asbestos-related mesothelioma deaths, Annals New York Academy Science, 1076; 871-881.
2. Brophy J., Keith M., Gorey K., Luginaah, I., Laukkanen, M., Hellyer, E., Reinhartz, A., Watterson A., Abu-Zahra, H., Maticka-Tyndale, E., Schneider, M., Beck, M. and Gilbertson, M. (2006) Occupation and breast cancer: a Canadian case-control study. Annals New York Academy Science, 1076: 765-777
3. O'Neill R, Pickvance S, Watterson A (2007) Burying the evidence: how Great Britain is prolonging the occupational cancer epidemic. IJOEH 13(4):428-36. 9
4. Dematteo R, Keith R, Brophy J, Wordsworth A, Watterson a et al (2012) Chemical Exposures of Women Workers in the Plastics Industry with particular reference to breast cancer and reproductive hazards. New Solutions. 22(4):427-448
5. Brophy JT, Keith MM, Watterson A, Park R, Gilbertson M, Mattock-Tyndale E, Beck M, Abu-Zahra H et al. Breast cancer risk in relation to occupations with exposure to carcinogens and endocrine disruptors: a Canadian case--control study. Environmental Health 2012, 11:87 (19 November 2012)
6. Watterson A (2013) The Economic Costs of Asbestos-Related Diseases. In WHO Report on the Human and Financial Burden of Asbestos. WHO, Bonn

4. Details of the impact

The Stirling research addresses the critical research, policy and effective public health interventions gap influencing key stakeholders through a high profile preventive message in public settings.

1) UK impact

Scottish government funding of drug treatments for occupationally related diseases changed following research from the team (Experts fight to keep NHS treatment for cancer Herald April 26 2007; Herald Editorial on Alimta 26 April 2007).

Macmillan Scotland found the research “contributed to and benefited work on cancer prevention and the economic consequences of work-related cancers. The research from the group during 2003 to 2013 on the scale, costs and consequences of occupational cancers has been used by Macmillan to develop work on welfare rights that greatly improved the quality of advice to support cancer patients in Scotland. The research papers from the group on asbestos- related cancers and cancer prevention have helped to shape relevant parts of Macmillan policy and practice and on-going projects to support those with a range of work-related cancers including the development of Macmillan's benefit advisers' network in Scotland.”

The TUC - 6 million members in 53 affiliated bodies - observed that the research “has enabled us to increase awareness and understanding about the true burden of occupational cancers amongst our membership and the wider occupational health and safety community. In addition we have used the published research in our discussions and campaigning work with the HSE and government as we seek to increase the priority and resources given to this area of work. Finally we have used it to educate and inform our activists through guidance and training courses with the aim of ensuring that the information is used to prevent further exposure”.

Other civil society groups - the Alliance for Cancer Prevention, the Cancer Prevention Society, ChemTrust, WWF and FOE - have all used the work of the team.

2) *International reach and impact*

Beyond Europe, international organisations have used the research to inform policy and practice (2009-2013). European MEP groups invited the team to present findings published in 2006 on the economic costs of specific occupational cancers at the European Parliament. WHO commissioned the lead researcher to prepare a tool kit on costing certain occupational cancers (WHO 2012/13). . A team member, O'Neill, now acts as a reviewer for WHO health and safety initiatives. In 2006 the team were invited to contribute to global conferences for health professionals as well as academic researchers (Living in Chemical World: framing the future in the light of the past Conference. Italy 2006. Annals of New York Academy of Sciences. Vol 1076).

For the ITUC, representing 175 million workers in 156 countries, the research "served as a critical support for ITUC official interventions in UN-led intergovernmental processes, such as the Strategic Approach for International Chemicals' Management (SAICM) and the three chemical-related UN conventions (Rotterdam, Basel and Stockholm). The 'Zero Cancer campaign' was also incorporated as best practice for the union movement action on chemical management". The 'Zero Cancer' strategy, based on recommendations proposed by the Stirling research, was adopted by the International Trade Union Confederation (ITUC) and publicised worldwide, with activities including a global day of action on occupational cancer.

The research formed the basis for new global occupational cancer prevention and costing policies developed by the International Metalworkers' Federation and the Building and Woodworkers' International (BWI). BWI represents around 328 trade unions representing around 12 million members in 130 countries.

The Lowell Center for Sustainable Production and the Massachusetts Toxics Use Reduction Institute – considered that " your occupational cancer prevention and "Zero Cancer" campaign have strongly affected our input to the (US) President's Cancer Panel report "Reducing Environmental Cancer Risk," released in 2010. Your work has also supported our efforts at the Toxics Use Reduction Institute to reduce carcinogenic chemicals used and released by Massachusetts companies. The Toxics Use Reduction Institute is a multi-disciplinary research, education and policy center that helps companies and communities reduce the use of toxic chemicals. There was a 32% reduction in use of carcinogens and 93% decline in releases in the period 1991-2010, as reported earlier this year. We consider your Zero Cancer work in the UK to be a model for what we are trying to achieve in our efforts toward a cancer-free economy in Massachusetts and the U.S"

The Stirling team have also acted as expert advisers for the Clean Clothes Campaign silica-related disease prevention working party (international), the People's Training and Advisory Centre's board on occupational disease prevention (India) and the International Centre for Responsible Technology's international board (US/Global).

4. Sources to corroborate the impact

Lowell Center for Sustainable Production, Massachusetts, USA, http://www.sustainableproduction.org/

Hazards Magazine Resource website: http://www.hazards.org/index.htm

TUC Occupational Cancer Workplace Guide: https://www.tuc.org.uk/sites/default/files/occupationalcancer.pdf

In addition, contacts have been provided with the REF submission to corroborate the impact from WHO Europe, European Environment Agency, Breast Cancer UK, Alliance for Cancer Prevention UK.