An introduction to evidence based environmental health

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Abstract

This research briefing considers why the environmental health profession needs to become more research active and evidence based. We first explore what we mean by ‘environmental health’ and ‘evidence based environment health’ before explaining why a stronger research culture is desirable. We finish by introducing a vision of what evidence based environmental health could look like.

What is environmental health?

Environmental health (EH) is a relatively new term (MacArthur and Bonnefoy, 1997) without a simple definition (CEH, 1997; Smith et al., 1999). Some years ago the Environmental Health Policy Committee of the United States Department of Health and Human Services identified more than 28 different definitions of environmental health, but in turn failed to adopt one because they believed that they had functioned well and were, therefore, reluctant to add another to the list (EHPC, 1998). Until a better definition comes along we adopt the two part definition developed gradually by a series of environmental health conferences held under the World Health Organisation umbrella:

“Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can potentially affect adversely the health of present and future generations” (WHO Europe, 1994: page unknown)

This definition is chosen because the first part acknowledges the breadth, complexity and inter-related nature of environment-health relationships, whilst the second part recognises the role of interventions that includes the role of EH professionals. In the UK this professional public health role gradually emerged during the 19th century (see Crook, 2007), but despite these historical origins observers of the UK environmental health profession have long described a disconnection between EH and broader public health agendas for reasons including political and organizational factors (Burke et al., 2002; McCarthy, 1996) and the attitudes of EH professionals themselves (Gray, 2004).

We recognise that some EH professionals remain confused about their public health roles, but we consider EH as one part of a much broader public health. Rayner and Lang’s (2012) recent grand public health vision also recognises EH (the sanitary-environmental model) as one of five models of public health and provides a much needed critique of its strengths and weaknesses towards the ecological public health they advocate.

Perhaps one of the biggest challenges facing all EH students, practitioners, policy makers and academics is grappling with its cross-disciplinarity, a generic term we use to describe any kind of mixing (e.g. inter-, intra-, multi-disciplinary) of academic disciplines. Returning to the definition of EH above, relations between the environment and health and their management have been shaped by many disciplines over the centuries. For example two studies (Crook, 2007; Hutter, 1988) exploring the work of EH professionals describe decision making shaped by factors and disciplines (in brackets) including:

- Individual beliefs (sociology, philosophy)
- Professional factors (law, politics, sociology)
- Scientific empiricism (natural and medical sciences)
- Organisational priorities (law, politics, economics)
- Relations with colleagues and superiors (sociology, psychology)
- Relations with potential EH offenders (law, sociology, psychology, politics)

This list is not exhaustive but it illustrates why, in our opinion, environmental health is best conceptualised as a subject comprised of many, frequently overlapping, disciplines. Research to better define the disciplinarity of environmental health is another priority, but environmental health practice is by its nature cross-disciplinary because decision making requires EH professionals to engage with so many different disciplines every day. This is important for the following reasons:

- Environmental health is more complex than EH professionals and others often appreciate, recognising and managing this is critical;
• The cross-disciplinary abilities of EH professionals are one of their greatest strengths, but this cross-disciplinary also leaves EH professionals vulnerable because they lack a single disciplinary home and body of knowledge;

• EH professionals should recognise the limits of their cross-disciplinary knowledge and the benefits that could arise from collaborating with those with a greater knowledge of the disciplines shaping daily environmental health work.

**What is evidence based environmental health?**

This section briefly examines developments in evidence based policy and practice in the health sector before defining evidence based environmental health. Organisations and individuals have long sought to influence government policy and practice using evidence. The evidence in Edwin Chadwick’s 1842 Report on the Sanitary Conditions of the Labouring Population of Great Britain was instrumental in describing environmental health conditions and inequalities across industrialising Britain and how these could be addressed by cross-disciplinary EH interventions (e.g. household water supplies, toilets and sewerage) (Chadwick, 1842/1965).

More recently many factors have led to a rise in the use of evidence in policy and practice. These include greater pressures towards productivity and competitiveness, an increasingly knowledgeable and well informed public, declining trust in the expertise of professionals and greater scrutiny and accountability of government (Davies et al., 2000). The philosophy that ‘what matters is what works’ was coined in 1997 by a newly elected Labour government in the UK and suggested a retreat from policy making based on political ideology (ibid). But ideology remains a powerful driver of environmental health (Vickers, 2008) and politicians and policy makers can be heard every day jousting over ‘the evidence’ that supports their arguments or undermines their opponents.

A useful starting point is Sackett et al.’s (1996) discussion in the *British Medical Journal* about what evidence based medicine is and isn’t. They begin by defining evidence based medicine as:

“...the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients” (Sackett et al., 1996:71-72).

They envisage the ‘good doctor’ being able to integrate individual clinical expertise with the best available external evidence and patient choice in their clinical decision making. But they also reject fears about top-down/ivory tower/cost cutting drivers of evidence based practice because the evidence might be incomplete (hence ‘best evidence’) or support more costly interventions. Further, the evidence always works alongside, not in replacement of, professional judgment and the preferences of individual patients.

Similarly, Aveyard and Sharp define evidence based practice as:

“...practice that is supported by a clear, up-to-date rationale, taking into account the patient/client’s preferences and using your own judgment. If we practice evidence based practice then we are set to give the best possible care” (2009:4).

But evidence based practice remains contested territory. In the social work profession Dodd and Epstein (2012) argue that evidence based practice is problematic because it is driven by academics and prior research knowledge, and privileges more quantitative research approaches. Instead they advocate ‘practice based research’ that is driven by practitioners and their knowledge and wisdom and values all research approaches. Our understanding of the evidence based practice literature is more inclusive than Dodd and Epstein suggest, but we acknowledge the need for EH professionals to bridge the gaps between research, policy and practice.

Returning to Aveyard and Sharp’s definition above we make two important clarifications before its application to EH. First, we consider policy (e.g. legislation, codes of practice, targets etc.) critical to evidence based environmental health because it remains a significant driver of practice and is sometimes shaped more by tradition and/or political ideology than evidence. Indeed, EH policies have long provided fertile ground for research inquiry (e.g. Hutter, 1988; Vickers, 2008) and engagement with this literature by EH professionals is a priority.

Second, EHPs are not clinicians with responsibility for patients, but as public health professionals should consider the preferences of the local citizens and the wider public influenced by EH activities. Citizens are used here to include all those who EH professionals encounter during their daily work (e.g. business owners/operators, the public) and in recognition that citizens have legal rights and responsibilities. This is preferred to the term client because of the latter’s associations with the market driven reforms that have influenced EH policy making since the early 1980s and can ignore the most vulnerable in society. Therefore we define evidence based EH as:

“...environmental health policy and practice supported by the best available evidence, taking into account the preferences of citizens and the wider public and our own professional judgment.”

Implicit in this definition is the ability to provide a clear and up-to-date rationale for practice which goes beyond responses like ‘it’s what the law says!’ Professional judgement includes the experiences and knowledge of citizens and the wider public and the context in which decisions are made including enforcement culture (Hutter 1989), geographical and environmental (e.g. urban/rural) and historical factors (e.g. compliance history) for example.

We also urge EH professionals not to be too dogmatic about evidence but instead to have the confidence to embrace its uncertainties and use them as an opportunity to improve environmental health. The following quote from Rayner and Lang’s highly recommended (2012) *Ecological Public Health* illustrates this well:
“Evidence is always uncertain. It changes. It is fallible... People are always trying to make sense of evidence. The evidence of today, moreover, will be replaced by the evidence of tomorrow, and so on. That is the progress of scientific knowledge... Our view is not to fantasise about an unrealisable state of perfect synchronicity between evidence, policy and practice. Nor is it to slump into a cynical view that policy and practice can ignore evidence. The task is to produce knowledge which helps frame and guide policy and action through or over the gap between evidence and policy or practice” (Rayner and Lang, 2012:332-333).

A word of warning is also needed here. The term 'evidence based' has become increasingly politicised and is often used to support the dominant opinion or those with the most powerful voices. In response there has been something of a backlash towards the term but we support its' use provided you take the following course of action:

1) Tune your ‘warning antennae’ to alert you every time you see terms like evidence or evidence based in a publication or hear someone describe their work in this way;
2) Turn to the references page or challenge the speaker about what they mean by evidence (e.g. what evidence have you used?)
3) If there are no references, or the publication is poorly referenced, or the references are based on single studies or personal experiences or have been carried out by those with vested interests they might not have declared - treat the ‘evidence’ with extreme caution.

Why is evidence based environmental health needed?

Before grappling with this question it is important to consider the core potential of EH research. EH research can provide evidence for better understanding some of the greatest and most persistent challenges faced by societies today like poverty, inequality, climate change, urbanization and the need for more sustainable economies. Returning again to the definition of EH used above, research into the complex relationships between human health and environmental factors has a long history and is constantly being re-focused, more recently in areas like mental health and wellbeing for example.

For EH professionals probably the greatest argument supporting research relates to its potential for improving our understanding of how environment-health relationships are managed and how effective EH interventions are. A few academics from disciplines including sociology (e.g. Hawkins, 1984; Hutter, 1988) and history (e.g. Crook, 2007; Hamlin, 2005) have produced detailed descriptions of how EH professionals manage environment-health relationships, but research by EH professionals themselves remains rare and is one reason for our decision to create the EHRNet. Furthermore, recent changes in the organisation of public health in England and continued cuts to local authority spending mean evidence is becoming increasingly important to demonstrate the impact of EH work to those making commissioning and funding decisions.

Returning to why evidence based EH is needed Greenhalgh (2008) provides warnings of the non evidence-based drivers of decision making by health professionals which we have all experienced in our own EH work:

- **Decision-making by anecdote** – where decisions are based solely on personal experience;
- **Decision making by press cutting** – where decisions are based on single published studies without consideration given to the methods used or the results of alternative studies;
- **Decision making by GOBSAT** (Good Old Boys Sat Around Tables) – the product of biased, ‘expert opinion’ that in reality could simply consist of the bad habits and personal experiences of ageing professionals; and
- **Decision making by cost minimisation** – where the cheapest option is followed, regardless of its effectiveness (Greenhalgh, 2008:5-9).

Another justification for evidence based practice is to move beyond the traditions and rituals that continue to influence environmental health practice. Richard North (1999) is one of very few EH professionals to have subjected environmental health practice to critical review and provides many examples of how easily poor science can become conventional wisdom and then absolute standards (e.g. the banning of bleach on health and safety grounds) amongst EH professionals.

The development of food hygiene risk rating systems and their abilities to predict the epidemiological risk associated with food premises provides another example of how questionable science can become standard practice. Day (2011) describes how the original systems on which scores were based were designed to provide a ‘quick and dirty’ means of prioritising inspection resources. Two case control studies further question the effectiveness of food hygiene risk rating systems and the EH professionals applying them (Mullen et al., 2002; Jones et al, 2008). However, few EH professionals seem aware of these studies and therefore the final section of this briefing starts exploring what evidence based EH might look like?

What might evidence based EH look like?

Future research briefings will explore topics like how to improve your reading and writing skills and more detail on evidence based approaches in specific areas of EH (e.g. food safety, housing), but in the meantime we have started to develop a two part vision of what an evidence based EH might look like that also identifies some of the problems faced by EH professionals. At one level we dream of a time when environmental health evidence:

- is accessible to all EH professionals and those affected by their decisions;
- informs debate about policy and practice in the classroom, offices and streets;
- shapes EH policy and practice at all levels and alongside professional judgement and the preferences of citizens and the wider public.

At another level we dream of a time when organisations (particularly Universities) and individual EH professionals:
• understand, value and support evidence and research activity;
• learn how other professions have become more research active and made their practice more evidence based;
• welcome criticism, debate and challenge as opportunities to improve EH policy and practice;
• organise to support individuals and organisations with research and direct their research activities towards known gaps and priorities;
• move outside their comfort zones and build stronger links with other public health professionals, researchers and wider society for the benefit of all.
• Read beyond traditional media, such as guidance, technical reports, and legislation to encompass wider reflection on research from other disciplines.

Conclusion
At the time of writing it seems likely that the practice of EH professionals wherever they work will come under every greater scrutiny. Very simply, if EH professionals cannot provide evidence that their interventions work are they failing to protect the public’s health? By moving towards more evidence based practice we hope that EH professionals could develop the confidence to better assert their long standing role in maintaining and improving the health of the public. We hope this research briefing and our other work will assist readers in such endeavours.

References


The UK EHRNet was founded in summer 2011 by five British academics and aims to promote a research and publication culture in the EH profession, to develop the research skills of EH professionals and to offer guidance on how research can be better integrated into the EH profession.

Further information (including our eBook ‘Evidence, research and publication: a guide for EH professionals’ on which this briefing is based) is available via: http://ukehrnet.wordpress.com/

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