

Communicating “evidence”: Lifestyle, cancer and the promise of a disease-free future

Kirsten Bell and Svetlana Ristovski-Slijepcevic

Abstract: In the era of evidence-based healthcare, conferences aimed at disseminating scientific knowledge perform an essential role in shaping policy and research agendas and transforming physician practice. Drawing on observations at two US cancer prevention conferences aimed at “knowledge translation”, we examine the ways that evidence regarding the relationship between cancer and lifestyle is articulated and enacted. We show that characterizations of the evidence base at the conferences far outstripped what is presently known about the relationship between cancer and lifestyle. The messages presented to conference participants were also personalized and overtly moralistic: with attendees engaged with not merely as practitioners, but as members of the public at risk for cancer. We conclude that conferences seeking to bring together knowledge “makers” and knowledge “users” play a potentially important role in the production of scientific facts and are worthy of further study as distinct sites of knowledge production.

Introduction

At the 2010 American Institute for Cancer Research’s (AICR) annual conference on “Food, Nutrition, Physical Activity and Cancer”, in a well-attended plenary session on obesity and cancer, arguably one of the most well received speakers was an American epidemiologist who spoke on the global obesity epidemic.

She begins her presentation by discussing the problem of obesity in the US, flashing up a slide showing a map of the USA filled with “bad” foods such as sausages and donuts. “Obesity is an issue”, she gravely informs the audience, “that’s making its way into game shows (an image from the popular television show The Biggest Loser flashes on-screen) and the White House itself” (a newspaper clip of Michelle Obama’s “Let’s Move!” campaign flashes on-screen). “Two thirds of American adults are overweight and obese”, she continues, and these are “really, truly amazing numbers”. What follows is a vividly illustrated whirlwind tour of the state of fatness across the world: from the “most obese” people (in the Western Pacific) to those where obesity has become a problem over the past few decades (the Brazilians), to those who are just now beginning to manifest signs of an impending epidemic (the Chinese). This material, like the rest of the presentation, is heavy on generalizations and light on scientific references.

“Why are we even worried about this?” she asks the audience as she begins her summary. “Because of the medical complications of obesity – like cancer”. She highlights a recent AICR report and its “great job of bringing overweight and obesity to

the forefront”. She continues: “35% of esophageal cancer could be prevented if overweight/obesity was eliminated”. “I know this is theoretical and numbers don’t always come out as you expect, but look at that number!” “Increases in overweight and obesity will lead to an increase in certain cancers and we have good evidence of that”. Her clincher has the audience nodding their agreement: “given what we think is coming, it’s our job to think about these things and be part of the solution!” She ends to enthusiastic applause from the audience.

This presentation occurred at a conference aiming to synthesize the latest scientific evidence on the relationship between cancer and lifestyle. We have used this excerpt not to highlight its atypicality, for the content and tone of the presentation is similar to countless others we have witnessed at such conferences, but to highlight some distinctive features of oral presentations of scientific data aimed at translating evidence to practitioners, policy makers and members of the public.

Since the late 1980s, the demand for “evidence” has become central to health research and policy, a preoccupation that has markedly intensified in the era of “evidence-based medicine” (Lambert 2009). Evidence-based medicine (EBM) has been one of the most important social movements in health and medicine in recent years (Traynor 2000; Pope 2003; Mykhalovskiy and Weir 2004; Lambert 2006, 2009). A term first coined by a group of clinical epidemiologists in 1992, EBM was announced with considerable fanfare as a new paradigm for medical practice. According to its supporters, EBM provided an approach to clinical activity that would move the practice of medicine beyond individualized and irrational decision making towards a careful review of the best available research evidence (Mykhalovskiy and Weir 2004; Lambert 2006, 2009). Despite initial resistance amongst physicians, it has “rapidly succeeded in displacing the traditional grounds of expert knowledge – in clinical expertise – in favour of a new regime of truth whose legitimate currency is statistical evidence” (Lambert 2009: 17). Moreover, the movement has also expanded to encompass other domains of healthcare practice, including public health, nursing, allied health professions and health administration and policy. “EBM creep” has also seen its core principles and processes embraced by fields well beyond health and medicine (Author published).

As an instrument of accountability, the underlying impetus for evidence-based medicine and healthcare is almost impossible to challenge. Its emergence has thus been linked with the rise of “audit culture” and the perceived need for increased accountability, transparency and cost effectiveness (Lambert 2006, 2009; Storeng and Béhague 2014). According to Broom and Adams (2012: 3), “Evidence-based paradigms now fundamentally shape the way health service providers, health funding bodies, governments and policy makers view ‘effectiveness’, and their willingness to fund and support interventions, practices, models of care and practitioner groups”. The influence of the paradigm has therefore seen the rise of “evidence-based advocacy”, with advocacy organizations increasingly articulating their goals and agendas in terms of “evidence” rather than explicit ideological or moral claims (see Storeng and Béhague 2014). As Hodžić (2013) observes, “evidence” has become the lubricant that keeps resources flowing between donors, organizations and policymakers.

The extraordinary rise of evidence-based medicine, healthcare and advocacy has been accompanied by a growing emphasis on “knowledge translation”, which focuses on the

mechanisms through which “knowledge” is transformed into “action” to ensure its rapid uptake by clinicians and decision makers (Straus et al. 2009). This concept, like the notion of evidence-based medicine itself, treats knowledge as consisting of objective, context-free scientific facts that need to be “translated” or “transferred” in comprehensible and useable form to practitioners, policy makers and others (Greenhalgh and Wieringa 2011). As Broom and Adams (2012: 2) point out, evidence-based healthcare seems benign “until one considers the question of what constitutes ‘evidence’ and how the technologies of capture, synthesis and dissemination imbue and exclude certain ideas about the importance of certain types of knowledge”.

Anthropological and sociological studies of evidence-based medicine and healthcare have highlighted the ways in which the movement has transformed knowledge hierarchies and what counts as evidence (e.g., Timmermans and Berg 2003; Mykhalovskiy and Weir 2004; Lambert 2006, 2009; Armstrong 2002, 2007; Wendland 2007; Broom and Adams 2012). They have shown that while the evidence-based movement is premised on the notion of “purity” (Traynor 2000), evidence production is a “powerful tool for political, moral, and economic negotiations” (Storeng and Béhague 2014 2014: 5). Drawing inspiration from the growing body of empirical work that treats the emergence of evidence-based medicine as a cultural practice, we are interested in the processes through which inconclusive evidence about the cancer-lifestyle connection is transformed into “evidence-based practice” at conferences intending to disseminate scientific knowledge to practitioners.

Cancer and lifestyle: the evidence in context

In 1981, Comaroff and Maguire observed that cancer “seems to call into question the effectiveness of current scientific knowledge itself” (p. 116). More than thirty years later, this statement continues to hold true. As Jain (2013) has recently noted, although cures for cancer have been promised throughout the twentieth century, scientists still furiously debate how cancer arises and whether it is actually one disease or hundreds. Despite the “sheer bafflement” (Jain 2013: 2) cancer produces and the ongoing uncertainty about the etiology of the disease and its prevention, the absence of evidence has not posed an insurmountable obstacle to the production of “evidence-based” guidelines. Knaapen (2013) demonstrates that guideline developers are increasingly preoccupied with this question of “how to address the challenges of providing evidence-based advice to address questions for which the evidence is lacking, of poor quality, immature or incomplete” (p. 682), especially given the need for policy makers and practitioners to say *something*, even if it is based on uncertain or weak recommendations.

These pressures are particularly intense in the arena of cancer research, which is today marked by a complex network of alliances between patients’ advocacy groups, cancer charities, government agencies and corporate entities (see King 2006; Klawiter 2008). Such alliances operate within what Novas (2006) terms a “political economy of hope”, with hope invested in research to develop a cure for cancer and improve treatment outcomes. The promise of research is evident in the mandate of the American Institute for Cancer Research, an advocacy organization that funds cancer research. According to their website:

Only decades ago, most believed that cancer simply strikes the unlucky – and that nothing can be done about it. Today, thanks to millions of dollars of AICR research, the world knows better. Our research sheds unique light on the cancer process – and

pinpoints the specific lifestyle choices that will save hundreds of thousands of lives every year in the US alone (AICR 2014a).

This emphasis on the role of a healthy lifestyle in staving off the disease reflects a growing body of epidemiological literature stressing the role of factors such as weight, diet and exercise in increasing cancer risk (e.g., Block et al. 1992; Friedenreich 2001; Calle et al. 2003; Renehan et al. 2008). For example, Calle et al. (2003) did much to legitimize the perceived relationship between obesity and cancer. Based on a prospective study of a population of approximately 900,000 U.S. adults, they estimated that current patterns of overweight and obesity in the United States accounted for 14 percent of all deaths from cancer in men and 20 percent of those in women. Another particularly influential article is Renehan et al.'s (2008) meta-analysis of 141 observational studies examining the relationship between body mass index (BMI) and cancer. Meta-analyses have a particularly high status in evidence hierarchies because they are seen to overcome the potential biases of individual studies (Armstrong 2007) and Renehan et al.'s study is the only meta-analysis to date of research findings on the relationship between obesity and cancer across specific disease sites. For these reasons, its conclusion that even a five kg/m² increase in BMI is associated with a substantially increased risk of common and less common malignancies in men and women was widely taken up.

Although these studies assume that “the relationships between body weight, health, food and physical activity are so finely calibrated and so well understood that just a tweak here and a tweak there can produce measurable health improvements” (Gard and Wright 2005: 128), scientific findings on the cancer/lifestyle link are incomplete, ambiguous and internally contradictory. Like the key obstetrical EBM texts Wendland (2007) analyzed, although these studies appear to be neutral and *unassailable* collections and analyses of data, they are consonant with wider cultural narratives – in this case about the “obesity epidemic” and its deleterious effects on health (see Gard and Wright 2005; Moffat 2010 for further discussion). Such narratives clearly underwrite the sorts of data collected in the studies, the ways it was analyzed, and the broader conclusions drawn. For example, Calle et al. excluded those who were underweight from their study, which relied on calculations that assumed “that the relative-risk estimates associated with overweight and obesity that were observed in the current study were causal and are generalizable to the U.S. population” (p. 1629). However, the mortality rates for those in the “overweight” BMI range were slightly *lower* than those in the “normal” BMI range and mortality rates for those who were “moderately obese” were only slightly higher than those in the normal range; even amongst the “morbidly obese” the death rate was not substantially higher (see Campos 2004 for a critique). Likewise, despite Renehan et al.'s (2008) conclusions, an increased BMI was associated with only four cancers in men and women and the risk ratios reported for these associations were relatively weak, ranging between 1.24-1.59 – lower than generally accepted epidemiological standards for establishing causality (see Ross 2005). For some cancers (e.g., lung, premenopausal breast cancer), evidence of an *inverse* correlation with BMI was found.

Despite the uncertainty of the evidence base on the relationship between cancer and lifestyle, the past decade has witnessed a growing emphasis on the need for lifestyle modifications once people have been diagnosed with cancer in order to improve cancer-related morbidity and mortality (see Author published). In other words, those concerned with *tertiary* cancer

prevention, i.e., the management of established or treated disease to prevent it from recurring or worsening, have begun to echo the sorts of claims made about *primary* cancer prevention. However, emerging data from lifestyle interventions with people diagnosed with cancer is similarly inconclusive. Irwin and Mayne (2008), for example, reviewed the results of diet and exercise-related interventions for women treated for breast cancer and found that the differences in survival in both interventions were not statistically significant. Based on these results, they conclude that: “the motivation for counseling patients to consume a prudent diet comes not from a clear evidence base supporting improvements in cancer outcomes, but rather a stronger body of evidence linking such diets with improvements in all-cause mortality” (p. 439).

In contrast to this growing stress on the role of lifestyle in primary and tertiary cancer prevention, there are clearly other important factors that influence the etiology of the disease. Beyond the well-documented associations between cancer and hereditary predisposition, there is longstanding evidence regarding the role of bacteriological agents and carcinogens in its genesis (see Hess 1997). Environmental agents have also been identified as a key potential source of carcinogenesis, especially given that more than 85% of cancers do not appear to be attributable to known causal factors (Belpomme 2007). In the words of Clapp et al. (2007: 633), “The scientific literature provides substantial evidence of environmental and occupational causes of cancer and fully justifies accelerated efforts to prevent carcinogenic exposures”. In light of the fact that the key risk factor for cancer is age, others, still, point to an aging population and improvements in diagnostic testing as largely responsible for the increase in cancer witnessed throughout the twentieth century (e.g., Newby et al. 2007). For those who have been treated for cancer, the mechanisms may differ again. For example, research with cancer survivors has shown that key treatments are neither uniformly curative nor free of iatrogenic consequences, producing a host of “late effects” that potentially include cancer itself (e.g., Ganz 2001). In sum, the evidence on the lifestyle-cancer link in the areas of primary and tertiary prevention is characterized by an extraordinary degree of uncertainty and is counterbalanced by a sizeable body of evidence highlighting the existence of a variety of other factors that influence the emergence and recurrence of the disease. How, then, do scientists tasked with “translating” this evidence for practitioners manage this uncertainty about the lifestyle-cancer relationship and to what effect? How does the medium of such “translation” affect the way in which it occurs? These questions form the basis of this article.

The study

Although conceptual critiques of evidence-based medicine abound, there is a need for empirically-grounded studies of the movement and its intellectual offspring (Mykhalovskiy and Weir 2004; Sandaunet and Willis 2012). As Mykhalovskiy and Weir (2004: 1064) note, the techniques of “knowledge transfer” that have accompanied the rise of the evidence-based movement are also deserving of scholarly attention. With this agenda in mind, the analysis that follows is based on observations drawn from two US conferences aiming to bring together researchers and practitioners for the purposes of such transfer.

We have chosen to focus on these conferences for several reasons. First, such meetings constitute a key mechanism for the process of knowledge translation. Discursively transformed into “educational interventions”, professional conferences ideally serve to “effect changes in performance and improve practice-related outcomes” (Davis and Davis 2010: E89). Second,

conferences constitute a distinct genre that cannot be understood merely as spoken versions of written forms (Dubois 1980; McKinlay and Potter 1987; Swales 1990). However, although such meetings are places where “particular interpretations (and not others) are attached to research findings, arenas where closure mechanisms may operate, and socially embedded events where wider social structures and processes may impinge” (Jacobs and McFarlane 2005: 318), they have been the focus of relatively little study.

A notable exception is Rock’s (2005) examination of the ways diabetes specialists engage with evidence-based clinical guidelines around the diagnosis of diabetes. Based on fieldwork conducted at Canadian Diabetes Association conferences she argues that EBM has raised the stakes for professional conferences attended by specialists, physicians, allied health professionals and patients. She continues:

Some previous social science research on EBM has involved observing and recording verbal exchanges at conferences, but this strategy could be used to a greater extent. Analyzing verbatim transcripts of conference presentations and question-and-answer sessions in research such as this carries epistemological advantages, in that the proceedings have not been contrived... [or] ‘tidied’ by the protagonists (p. 258).

Rock’s insights have informed our approach, which focused primarily on conference presentations themselves and the dialogue they engendered in formal discussion periods. However, unlike her diligent analysis of sixty hours of conference recordings from four years of conferences, ours is a broad strokes examination constructed from fieldnotes. Although conversation fragments were captured in our fieldnotes, we did not audio-record the presentations or the dialogue they generated – nor were these recordings publicly available (the PowerPoint presentations themselves are publicly archived). As we attended these conferences only once, our analysis presents merely a snapshot of how the relationship between lifestyle and cancer was being enacted at a single moment in time (2010). However, despite these limitations, we believe that our analysis provides a valuable complement to social science research on evidence-based medicine and healthcare, along with studies exploring dominant discourses on the relationship between cancer and lifestyle (e.g., Balslem 1993; Lantz and Booth 1998; Clarke and Everest 2006; Author published).

The conferences that form the focus of this article are the American Institute for Cancer Research’s *Annual Research Conference on Food, Nutrition, Physical Activity and Cancer (AICR)* held in October of 2010 and the biennial *Cancer Survivorship Research: Recovery and Beyond (CSR)* conference held in June of 2010. As should be evident from their titles, these conferences focus on primary and tertiary cancer prevention respectively and were chosen specifically for this reason. Their different foci thus provide a useful context to explore the larger question of how the relationship between cancer and lifestyle is being articulated and enacted in the era of evidence-based practice and advocacy. Both conferences took place in Washington DC, and their location evidences their connection with powerful government agencies, non-government organizations and corporations that heavily influence national and international policy agendas.

The *AICR* conference is organized by the American Institute for Cancer Research, a cancer charity founded in 1982 to advance the idea that cancer can be prevented through lifestyle

modifications in the area of nutrition and physical activity. In existence since 1990, the annual conference is billed as a “unique forum that brings together researchers and clinicians for a three-day program that is dedicated to increasing knowledge, stimulating research and promoting prevention and treatment of cancer through nutrition, physical activity and weight management” (AICR 2014b). Its sponsors are primarily commercial agri-businesses (e.g., AmeriFlax, Campbell’s, California Walnuts) and its participants are predominantly researchers and practitioners from North America, with a small percentage of international attendees.

Much of the 2010 conference content was devoted to presentations by invited speakers and reflected the priorities of the AICR as an organization. With an audience of about 300 people, the first day of the meeting included an opening plenary on the relationship between diet, physical activity, cancer and aging, followed by concurrent sessions on diet, physical activity and cancer survivorship and diet, inflammation and cancer. The second day included a breakfast symposium on cohort studies on diet and cancer, followed by concurrent sessions on obesity and cancer, nutrition proteomics and cancer prevention; the conference closed with a plenary session on the emerging science on the microbiome implications for diet and cancer.

Founded in 2002, *Cancer Survivorship Research* is a biennial meeting sponsored by the National Cancer Institute (NCI), the American Cancer Society (ACS), the LiveStrong Foundation and the Centers for Disease Control and Prevention (CDC). Although there is no direct corporate involvement in the *CSR* conference, several of its sponsors receive a large volume of corporate funding (e.g., the LiveStrong Foundation and the ACS). Like the *AICR* conference, its stated aim is to serve “as a forum for researchers, clinicians, cancer survivors, advocates, program planners, policy-makers and public health experts to learn about current and emerging cancer survivorship research” (ACS 2014). The 2010 conference included approximately 600 participants and a sizeable portion of the meeting schedule consisted of presentations by invited speakers, all of whom were leading figures in the field. Following opening addresses by the conference sponsors, the first day of the 2010 conference was devoted to plenary presentations examining physical activity, diet and weight and their impact on cancer survivorship. The second day of the conference began with a plenary on comprehensive approaches to cancer rehabilitation and recovery and included concurrent sessions on a variety of topics such as sexuality, fertility, young adults, women of color and the psychological impacts of cancer survivorship. The final day of the conference was devoted to plenaries on co-morbidities and cancer and follow up care.

As is evident from the descriptions of their content and intended aims, although scientists and other researchers were present at both events, their look and feel differed markedly from scientific conferences in oncology, epidemiology, dietetics and related disciplines. First, these are most decidedly *not* forums where evidence is discussed and debated; instead, as might be expected on events devoted to knowledge translation, it is presented for the audience as a *fait accompli*. Second, although the majority of the presenters at the conferences were prominent researchers, they often addressed the audience as if they were primarily clinicians able to directly intervene to change practice. In other words, participants were engaged with primarily as a conduit to the public with the capacity to intervene in the lives of cancer patients, or those “at risk” for cancer.

Lifestyle is the disease (and the cure): Enacting the “evidence”

As the name of *AICR* Conference (“Food, Nutrition, Physical Activity and Cancer”) suggests, the link between lifestyle and cancer is an overarching theme. Although the 2010 conference purported to present the latest research evidence on the links between weight, diet, physical activity and cancer, these links were generally treated as self evident by the conference presenters: “black-boxed” facts in Latour’s (1987) sense that required little in the way of explication or demonstration. For example, in the “Obesity and Cancer” session, four of the five speakers began their presentations by either explicitly declaring that their work revolved around obesity but not cancer or with caveats such as “I am not going to speak about the relationship between obesity and cancer, that’s been said already”. However, this meant that no one ever actually presented the evidence on the relationship between the two, despite this being the basis for the conference and repeated allusions to earlier phantom presentations where this evidence had been presented. Yet, although few presenters explicitly discussed the links between obesity and cancer, they generally presented the relationship as definitive in their concluding statements, as the excerpt provided in the introduction indicates.

The context of the conference played an important role in naturalizing these links between obesity, diet, physical activity and cancer, as the fact that the *AICR* even *has* a conference dedicated to this topic suggests from the outset that it is important: the existence of the conference therefore validates its existence. In light of this context, the one presentation in this session that explicitly examined the relationship between obesity and endometrial and ovarian cancers received very little interest and few questions from the audience. This is likely because the audience felt that the presenter was trying to (rather redundantly from their point of view) re-open a black box that was already closed. Audience members’ questions throughout the session therefore focused not on the evidence base but how to move forward with convincing the public to take individual responsibility for improving their diet and physical activity levels, and the interventions necessary to stimulate this change.

Although the *Cancer Survivorship Research* conference was more broadly framed than the *AICR* conference, an overwhelming focus on lifestyle was also apparent – particularly on the first day of the conference, which, following the initial opening addresses, was devoted to presentations on the relationship between diet, weight, physical activity and cancer survivorship. However, unlike the presenters at the *AICR* conference, who were able to treat the links between lifestyle and cancer as largely black-boxed, presenters at the *CSR* conference were required to engage with the evidence base, which they did to varying degrees. Here, they were helped considerably by the opening addresses, where several presenters highlighted the link between physical activity, obesity and cancer.

For example, the representative from the ACS compared the links between obesity and cancer to the links between smoking and cancer, noting that in the 1960s few people accepted the relationship between cigarette consumption and lung cancer. The implication was that in future the links between obesity and cancer would be as taken-for-granted as the relationship between smoking and lung cancer is today. Although he acknowledged that the relationship between obesity, cancer and high caloric intake was very “complicated”, he assured the audience that the conclusion was simple: “fatness causes cancer is how a guy from Detroit understands it”.

Similarly, in discussing cancer prevention, the CDC representative discussed smoking, nutrition and physical activity and the need for “prevention of these important risk factors for cancer”.

Although this context served to establish the credibility of the evidence base on the relationship between lifestyle and cancer, work was still required of the following presenters to legitimize these relationships. The first three presentations, in particular, focused on outlining the evidence base on obesity, physical activity and cancer. However, evident in all three presentations was the use of similar rhetorical strategies to solidify the speakers’ claims and manage the uncertainty intrinsic in the evidence base. Initially the presenters were careful to qualify themselves, emphasizing that evidence was “suggestive”, “pretty good”, “biologically plausible” and “growing”, with some presenters acknowledging the inconsistent nature of the available evidence. In many respects, the speakers engaged in what Hodžić (2013) labels the “performance of objectivity”. As she observes, “objectivity has an aesthetic form, and it looks like a pendulum... swing[ing] back and forth between data interpretations and qualifying statements that acknowledge the limitations of the study” (p. 97). What is at stake is not objectivity itself, but its performance and the need to represent themselves as “impartial scientists in order to have their interpretations trusted” (Hodžić 2013: 98). Moreover, acknowledging such uncertainty also serves to *manage* it. As Lingard et al. (2003) describe in their examination of the ways that doctors approach and portray medical uncertainty in discussing patient cases, appearing to acknowledge the uncertainties in the evidence base becomes a strategy for managing such uncertainty, allowing presenters to deflect criticism through pre-emptive avoidance of expected critique.

Although inconclusive or contrary evidence was acknowledged, it was explained away in acts of “creative epidemiology”. According to Storeng and Béhague (2014: 9), such strategies are often used to make messages “appear bigger and, by extension, more important”, with data presented in particular ways to ensure that the audience takes away the “right” message. Thus, the conference speakers presented data in ways that simultaneously upheld the principles of an evidence-based approach while leading the audience to certain conclusions. For example, when discussing the weak results of an exercise intervention for cancer survivors, one speaker argued that people who were overweight probably overestimated the amount of exercise they did at base line. Another speaker discussing the findings of a nutrition intervention argued that although overall findings did not suggest a significant link between diet and breast cancer, this was likely because the women who participated in the study already had a healthy diet. Their concluding statements, like those of the presenters at the *AICR* conference, were presented as definitive: exercise and weight loss interventions should be encouraged to improve cancer outcomes. Thus, by the end of the presentations, the question had become not: “Should we intervene?” but “*How* should we intervene?”

Interventions were the focus of the following session, where presenters outlined the components and effects of various weight loss and exercise interventions aimed at cancer survivors. Interestingly, several of the interventions incorporated not only cancer survivors but also family members such as children and partners. According to one presenter describing a weight loss intervention for breast cancer survivors and their daughters, it was important to “capitalize on the teachable moment caused by the cancer diagnosis” to encourage primary and tertiary cancer

prevention. Although the results of the interventions presented were far from compelling, the logic and value of lifestyle interventions became self-evident, established by the prior presenters' conclusions about the need *for* intervention.

Evident is the ways that inconclusive evidence was used to bolster presenters' truth-claims about the relationship between primary and tertiary cancer prevention and lifestyle. Consider the assertion by the presenter in the obesity and cancer session at the *AICR* conference noted in the introduction and reproduced here: (1) "35% of esophageal cancer could be prevented if overweight/obesity was eliminated." (2) "I know this is theoretical and numbers don't always come out as you expect." (3) "But look at that number! Increases in overweight and obesity will lead to an increase in certain cancers and we have good evidence of that." Examined as a written statement that can be re-read at one's leisure it seems somewhat nonsensical, and is a good example of the sort of liberties that can be taken with an audience that are impossible when attempted with a readership (see Goffman 1981). Yet, although the speaker acknowledged the artificiality of the figure she presented – and its status as an empty signifier – she then urged the listeners to treat the number as fact along the lines of: "I know this number is theoretical, but look at that number!" Here, we see a self-conscious awareness of the semiotic potency of numbers, even when they are explicitly unmoored from reality. As Storeng and Béhague (2014: 8) observe, "The political power of numbers exists even when the validity of the numbers is contested". In this framing, the figure becomes its own pure "simulacrum" (Baudrillard 1998) – a truth in its own right.

Cancer as a personal choice

Given the ways the evidence on lifestyle was framed at both conferences, cancer was implicitly presented as a choice: primary and tertiary prevention are possible if the public *make the right choices* by avoiding physical inactivity, losing weight and eating better. This view was particularly evident in presentations at the *CSR* conference, where participants were continuously exhorted to encourage cancer survivors to take charge of their lifestyles. "It's never too late to start an exercise program", counseled a speaker on energy balance and cancer prognosis. Noting that most patients diagnosed with cancer decreased their exercise levels by 50 percent, she stressed that "we need to encourage survivors to increase their physical activity after diagnosis". Despite acknowledging in passing that treatment side effects were one of the main reasons why physical activity levels tended to drop in cancer patients, the presenter made it clear that patient reticence needed to be overcome.

This continued to be a prominent theme in the following presentation. The speaker, a well-known dietitian discussing weight loss interventions for cancer survivors, emphasized the need to "push exercise" on cancer survivors and to ensure that prescriptions to count calories and increase physical activity levels got "beyond the parking lot". Citing body image concerns amongst her patients as one reason for their stated discomfort in exercising in public, these were dismissed as excuses in her next breath: "most people aren't thinking that!" The overall message was that cancer survivors had a duty to modify their lifestyles following diagnosis, regardless of the impact of the disease and its treatment, or the stigma attached to obesity.

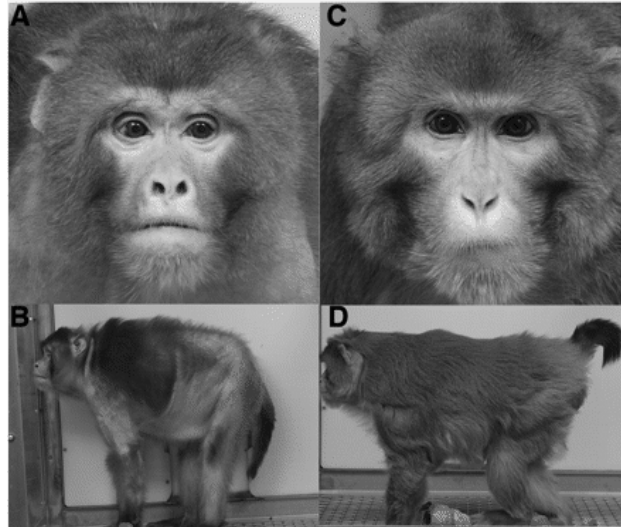


Figure 1. Rhesus monkeys on normal (left: A & B) and calorie-restricted diets (right: C & D) (reproduced with permission)

The emphasis on the need for the pursuit of health to take precedence over all other considerations became apparent at several points at both conferences. For example, in a presentation on dietary epigenetics at the *AICR* conference, the speaker displayed an image of two rhesus monkeys to illustrate the positive effects of calorie restriction (see Figure 1). He informed the audience that the monkeys differed in their dietary consumption: the monkey on the left (A and B) was allowed to consume a normal diet while the one on the right (C and D) was fed a calorie-restricted diet (a diet with about 25-40% less calories than normal but including all needed nutrients). Highlighting the more aged features of the “normal” monkey (evidenced by his thinned out, graying fur and arched back), the speaker impersonated a voice saying “Oh my, I am aging”, while for the one on the right he squeaked “I am hungry”. When the audience’s laughter died down he added, “While the one on the right looks unhappy, he is better off”, implying that the pursuit of health (via dieting and other activities that minimize weight) involved sacrifice and should take precedence over one’s happiness. Perhaps unsurprisingly, there was little discussion of the fact that the rhesus monkey’s weight loss was based on a dietary consumption from which it would be difficult to ensure satisfactory nutrient content under “normal” conditions (that is, without pharmacological help and nutritional supplements).

Drawing on the work of the literary theorist Kenneth Burke, Spoel et al. (2012) have explored discourses about healthy eating as a central symbolic hierarchy, which they define as a graded, value-charged structure in which things, people, works, acts and ideas are ranked:

This ranking occurs through moralistic admonitions and commandments – the language of ‘thou-shalt’ and, especially, ‘thou-shalt not’ – that motivate participants in any given hierarchy to strive to achieve the ideal that represents a state of perfection for that particular value-charged rhetorical ‘ladder’ (p. 4).

Through interviews with older Canadian and British adults, they highlight the rhetorics of mortification (negative terms such as “no”, “less”, “avoid”, “stay away from”) and redemption (stories of improvement and transformation following lifestyle change) that pervaded

participants' accounts of healthy eating. The absolutism of presenters' accounts at the *AICR* and *CSR* conferences evoked a similar valued-charged hierarchy – albeit one centered on weight and exercise as well as “healthy eating”.

In many respects, the moral valence attached to a healthy lifestyle in the presenters' accounts is symptomatic of *healthism* – the term Crawford (1980) used to describe the growing preoccupation with personal health as the primary focus for the definition and achievement of well being. Crawford connected the rise of healthism with developments in the political economy of the medical sector and American society at large, pointing to a growing privatization and depoliticization of the struggle for wellbeing. Subsequent scholars have continued to highlight the relationship between notions of risk, governance and a new morality consistent with the project of neoliberal self-surveillance (e.g., Lupton 1995; Petersen 1997; Petersen and Lupton 1997; Rose 1999). This devolved accountability is premised on the logic of choice – itself animated by notions of empowerment in which information “liberates” the individual from passivity (Mol 2008). However, presenters' insistence on the value of a healthy lifestyle also resonates with much older ideas about health and illness manifested in the cyclical “clean living” movements that have been a feature of American life for the past two centuries (Engs 2000). These movements have clear roots in Puritan ideologies about health and illness, in which “Illness was considered unnatural and a consequence of the individual's violation of physiological laws. Good hygiene and health became a moral obligation” (Engs 2000: 9).

We're *all* at risk and must *all* be vigilant

For the most part, the discussion about the need for lifestyle interventions to improve cancer outcomes was directed towards the general public, who were conceptually partitioned off from the participants at both conferences via an “us” (clinicians/researchers) and “them” (patients/the broader population) framing. However, a certain degree of slippage between these categories was evident in the ways that audience members were addressed. An underlying message of both of the conferences was that *all* of us are at risk and *none* of us can afford to be complacent.



Figure 2. ‘Avoid bad habits’ image (no copyright restrictions)

For example, although the presentation on physical activity guidelines for cancer survivors at the *CSR* conference was ostensibly focused on cancer survivors rather than conference attendees, embedded in the presentation was a slide titled: “What do we need to do???” accompanied by an image labeled “Avoid bad habits...” of a squirrel passed out, holding a miniature bottle of spirits and with a cigarette hanging out of its mouth (see Figure 2). As was no doubt intended, the slide elicited chuckles from the audience. However, although clearly designed to add some light relief to the presentation, it was apparent that the “we” in the slide was not cancer survivors but “us”: the audience. Interestingly, the slide made no reference to physical activity, despite this ostensibly being the focus of the presentation. Rather, “we” needed to avoid bad habits writ broad, presumably public health’s “unholy trinity” of lifestyle behaviors: smoking, drinking, and physical inactivity/overeating (Author published).

This slippage became quite explicit on several occasions at both conferences. For example, an exercise stretch band was included in the registration package for *AICR* conference participants and the Chair drew audience members’ attention to it in her opening address, encouraging participants to use it to exercise in their hotel rooms. “It’s never too late to prevent cancer” she reminded the audience, indicating that this was the key message to take away from the conference – presumably as both health professionals and citizens who may one day be confronted with cancer themselves. Similarly, at the end of the first day of the *CSR* conference, the Chair urged the audience to: “talk about exercise to the survivors you come into contact with”: “we’re charging you to get the message out”, “spread the word”. She then urged participants to “get that walk in before you go to bed”, making it clear that audience members were not merely a conduit for these messages but the recipients as well.

Perhaps the clearest demonstration of participants’ obligation to “practice what you preach” occurred on the afternoon of the first day of the *CSR* conference. Given the focus of the day’s presentations, it was somewhat surprising to see that the offerings at the afternoon break consisted primarily of fake orange juice and potato chips, along with a meager selection of fruit. To introduce the final session of the day, the dietitian moderating the panel mentioned the chips and indicated that she had wondered how many of the audience would bring them into the room after the break. Everyone immediately looked around to make note of those who had brought packets in with them, with those still eating chips (including both authors) looking suitably guilty. The session moderator continued that she was “pleased” to note that all of the fruit was eaten.

She then segued into an exercise to introduce the final session on physical activity and cancer survivorship. In order to provide the reader with a sense of how this activity unfolded, and the sorts of reactions it engendered, an extended quote from the first author’s fieldnotes is provided below:

The Chair tells us all to stand up, indicating that she is going to ask us a series of questions, and that we should sit down when we come to a question we do not respond affirmatively to. First off she asks: “How many of you are actively trying to increase your fruit/veggie intake?” I’m tempted to sit down but no one else does, so I remain standing because I don’t want to be the first one to bow out. She then asks “how many of you choose to eat white bread over whole grain?” I sit down at this point and I feel like

others are staring at me (perhaps felt rather than enacted stigma, but I doubt I'm the only one feeling judged).

She continues: "Who eats full fat rather than low fat dairy products?" "Who is not trying to increase their physical activity?" Even at this stage relatively few people have sat down and seem determined to show others how "healthy" they are. "Who is over 50 and has not been screened for prostate cancer?" "Who is over 40 and has not been screened for colon cancer?" "Who is over 40 and has not had a mammogram?" "Who has no idea what their cholesterol is?" "Who regularly drives over the speed limit?" A lot of people sit down at this point – I guess they feel this is an acceptable one to sit down in. "Who didn't floss yesterday?" At this point a handful of people are still standing, looking smug. The session convenor tells us to applaud these people and that she is impressed at how many there are in a group of this size.

This activity suggested that the “teachable moment” extended not merely to those diagnosed with cancer and their families but to those *doing* the diagnosing. Here, the semblance of distance between the participants as healthcare professionals and as potential patients broke down completely. The point of the exercise was clearly to convey the need for vigilance around lifestyle: all of us are “at risk” and none of us can afford to be complacent. However, the overtly moralistic dimensions of such injunctions were apparent. Good citizens floss their teeth, drive at the speed limit, ensure that they eat well and exercise and regularly undergo screening for cancer. Indeed, this type of activity would probably not have looked too out of place in a lecture run by a nineteenth-century health reformer like Sylvester Graham (best known for creating the eponymously named cracker), an ardent endorser of wheat bread, vegetarian diets, exercise and hard beds (Engs 2000: 55).

As Sontag (1990: 72-73) has observed, “Master illnesses like... cancer are more specifically polemical. They are used to propose new critical standards of individual health”. Nowhere are these standards illustrated more clearly than in the 1932 book *Cancer: Civilization, Degeneration. The Nature, Causes, and Prevention of Cancer, Especially in Its Relation to Civilization and Degeneration*. As its title suggests, this treatise railed against the deleterious effects of civilization, including such dangers as “handsome cars” and “the evils which arise out of inadequate exercise of the muscles” (cited in Jain 2013: 58). While “bad habits” may have been discursively transformed into “risk behaviors” and framed through the lens of “evidence”, the forms of moral suasion used in the book to articulate the dangers of an unhealthy lifestyle are strikingly similar to the messages promulgated at the two conferences.

Discussion and conclusion

Clearly, in the era of evidence-based healthcare, conferences aimed at bringing together researchers, policy makers and practitioners are seen to perform an essential role in transmitting new scientific knowledge, shaping policy and research agendas and ideally serving to transform healthcare delivery. However, the starting point of such conferences is that there *is* “evidence” to disseminate – i.e., that something has been proven or disproven. Yet, in the case of the two conferences considered in this article, the “evidence” in question is a body of inconclusive, inconsistent and internally contradictory findings.

Despite these limitations, characterizations of the evidence at the two conferences far outstripped what is presently known about the relationship between cancer and lifestyle, with participants presented a picture of disease etiology that was both simplistic and moralistic. In this framework, cancer is caused by an inadequate lifestyle and can be avoided and/or remedied by individual actions: primarily weight loss, increased physical activity and an improved diet. Intriguingly, while overt moral and ideological claims are anathema to evidence-based practice – embedded as it is in notions of scientific objectivity and neutrality – they nevertheless flowed quite explicitly in the forms of knowledge translation that occurred at the two conferences we observed. As we have illustrated, the “performance of objectivity” (Hodžić 2013) entailed in presenters’ discussion of the evidence was enfolded within – and drew much of its rhetorical force from – moral and commonsense appeals.

Although these conferences form one of only a number of methods of knowledge translation, they play a potentially distinctive role in the production of scientific facts – *especially* as disseminated beyond the scientific community (Rock 2005). As Goffman (1981) notes, lectures are more than text transmission, otherwise there would be little point in attending them. According to Goffman, people attend such lectures because something is infused into the speaking on the occasion of the text’s transmission. In his words,

To the degree that the speaker is a significant figure in some relevant world or other, to that degree this access has a ritual character, in the... sense of affording supplicants preferential contact with an entity held to be of value. May I add that in thus gaining access to an authority, the audience also gains ritual access to the subject matter over which the speaker has command (p. 187).

By absorbing presentations from leading figures in the field, audience members gain ritual purchase over subject matter (“the evidence”) that would otherwise require a considerable expenditure of effort to acquire. Moreover, the evidence is not merely presented to them but translated for them; in lectures the speaker functions as a broker of his or her own statements, “a mediator between text and audience” (Goffman 1981: 177). As we have illustrated, the conferences themselves are clearly mediatory rather than intermediary in function – rather than transporting meaning without transformation, they “transform, translate, distort, and modify the meaning or the elements they are supposed to carry” (Latour 2005: 39). Thus, these conferences actively produce the evidence they claim to disseminate. They “are one of the crucial locations where truth is made... the places where the community learns the etiquette of today’s truth” (Collins 2004: 451).

These distinctive features beg the question of what kind of impact such conferences have on practitioners – a question we are unable to answer, as we did not explore how participants themselves responded to the messages promulgated at the meetings. Indeed, accounts of knowledge translation commonly suggest that while conferences are one of the most common forms of “transfer”, they generally produce little change in practice (Davis and Davis 2010a). As a growing body of work has illustrated, the relationship between the formal rationality of EBM and clinical reasoning is complex rather than straightforward (e.g. Timmermans and Berg 2003; Armstrong 2002, 2007).

It would also be worth exploring the ways in which conferences aimed at knowledge translation compare with scientific conferences themselves, as we suspect that many of the dynamics we saw at these conferences – especially the overt forms of moral suasion presenters used – would not be in effect at scientific meetings (although it is also possible the ephemeral nature of the medium may encourage them). Finally, it would also be interesting to explore oncology conferences rather than conferences aimed at cancer control and prevention, where the focus is more explicitly on cancer treatment and where notions of personal responsibility are likely to be downplayed (although perhaps not entirely absent). Regardless of the particular form such research takes, we would suggest that there is considerable value in studying conferences as *distinct* sites of knowledge production and that scholars interested in evidence-based medicine and healthcare would be well served by turning further attention to this medium.

Acknowledgements

The research on which this article is based was funded by a Social Sciences & Humanities Research Council Operating Grant titled “Between Life and Death: The Contradictions of Cancer Survivorship” (PI: K. Bell). Ethics approval for this study was obtained from the University of British Columbia Behavioural Research Ethics Board prior to the conduct of the research. Thanks are due to Darlene McNaughton for her feedback on an earlier version and we would also like to acknowledge the invaluable input of Lance Gravlee and the anonymous reviewers who have contributed to the manuscript’s final iteration.

References

AICR

2014 AICR Research Conference. American Institute for Cancer Research.
<http://www.aicr.org/cancer-research/conference/>, accessed April 25, 2014.

ACS

2014a Our History. American Cancer Society.

http://www.aicr.org/about/about_history.html, accessed April 20, 2014.

2014b Biennial Cancer Survivorship Research Conference. American Cancer Society.

<http://www.cancer.org/research/survivaltreatmentresearch/biennial-cancer-conference>, accessed April 25, 2014.

Armstrong, David

2002 Clinical Autonomy, Individual and Collective: the Problem of Changing Doctors’ Behaviour. *Social Science and Medicine* 55(10): 1771–1777.

2007 Professionalism, indeterminacy and the EBM project. *BioSocieties* 2: 73-84.

Bell, K.

2010 Cancer Survivorship, Mor(t)ality, and Lifestyle Discourses on Cancer Prevention. *Sociology of Health and Illness* 32:349–364.

2012 Cochrane Reviews and the Behavioural Turn in Evidence-Based Medicine. *Health Sociology Review* 21:313–321.

Bell, K., D. McNaughton and A. Salmon, eds.

2011. *Alcohol, Tobacco and Obesity: Morality, Mortality and the New Public Health*. London: Routledge.

Balshem, Martha

1993 *Cancer in the Community: Class and Medical Authority*. Washington, DC: Smithsonian Institution.

- Baudrillard, Jean
1998 *Simulacra and Simulations*. In: Poster, M. (ed) *Jean Baudrillard, Selected Writings*. Stanford, CA: Stanford University Press, pp. 166-184.
- Belpomme, D.
2007 *Cancer and the Environment: Facts, Figures and Misinterpretations*. *Biomedicine and Pharmacotherapy* 61: 611-613.
- Block, Gladys, Blossom Patterson and Amy Subar
1992 *Fruits, Vegetables, and Cancer Prevention: a Review of the Epidemiological Evidence*. *Nutrition and Cancer* 18(1): 1-29.
- Broom, Alex and Jon Adams (eds)
2012 *Evidence-Based Healthcare in Context: Critical Social Science Perspectives*. Surrey: Ashgate.
- Calle, Eugenia E., Carmen Rodriguez, Kimberly Walker-Thurmond and Michael J. Thun
2003 *Overweight, Obesity and Mortality From Cancer in a Prospectively Studied Cohort of U.S. Adults*. *New England Journal of Medicine* 348(17): 1625-1638.
- Campos, Paul
2004 *The Obesity Myth: Why Our Obsession with Weight is Hazardous to Our Health*. London: Penguin.
- Clapp, R.W., G.K. Howe and M.M. Jacobs
2007 *Environmental and Occupational Causes of Cancer: a Call to Act on What We Know*. *Biomedicine and Pharmacotherapy* 61: 631-639.
- Clarke, Juane N. and Michelle M. Everest
2006 *Cancer in the Mass Print Media: Fear, Uncertainty and the Medical Model*. *Social Science and Medicine* 62: 2591-2600.
- Collins, Harry
2004 *Gravity's Shadow: the Search for Gravitational Waves*. Chicago: University of Chicago Press.
- Comaroff, Jean and Peter McGuire
1981 *Ambiguity and the Search for Meaning: Childhood Leukemia in the Modern Clinical Context*. *Social Science and Medicine* 15B: 115-123.
- Crawford, Robert
1980 *Healthism and the Medicalization of Everyday Life*. *International Journal of Health Services* 10(3): 365-88.
- Davis, Dave & Nancy Davis
2010 *Selecting Educational Interventions for Knowledge Translation*. *Canadian Medical Association Journal* 182(2): E89-E93.
- Dubois, Bob
1980 *The Genre and Structure of Biomedical Speeches*. *Forum Linguisticum* 5: 140-168.
- Engs, Ruth Clifford
2000 *Clean Living Movements: American Cycles of Health Reform*. Westport, CN: Praeger.
- Friedenreich, Christine M.
2001 *Physical Activity and Cancer Prevention: From Observational to Intervention Research*. *Cancer Epidemiology Biomarkers and Prevention* 10: 287-301.
- Ganz, Patricia
2001 *Late Effects of Cancer and its Treatment*. *Seminars in Oncology Nursing* 17(4): 241-248.

- Gard, Michael and Jan Wright
2005 *The Obesity Epidemic: Science, Morality and Ideology*. London: Routledge.
- Goffman, Erving
1981 *Forms of Talk*. Philadelphia: University of Pennsylvania Press.
- Greenhalgh, Trisha and Sietse Wieringa
2011 Is It Time to Drop the ‘Knowledge Translation’ Metaphor? A Critical Literature Review. *Journal of the Royal Society of Medicine* 104:501–509.
- Hess, David J.
1997 *Can Bacteria Cause Cancer? Alternative Medicine Confronts Big Science*. New York: New York University Press.
- Hodžić, Saida
2013 Ascertaining Deadly Harms: Aesthetics and Politics of Global Evidence. *Cultural Anthropology* 28(1): 86-209.
- Irwin, Melinda L. and Susan T. Mayne
2008 Impact of Nutrition and Exercise on Cancer Survival. *Cancer Journal* 14(6): 435-441.
- Jacobs, N. and A. McFarlane
2005 Conferences as Learning Communities: Some Early Lessons in Using ‘Back-Channel’ Technologies at an Academic Conference – Distributed Intelligence or Divided Attention? *Journal of Computer Assisted Learning* 21(5): 317-329.
- Jain, S. Lochlann
2013 *Malignant: How Cancer Becomes Us*. Berkeley: University of California Press.
- King, Samantha
2006 *Pink Ribbons, Inc.: Breast Cancer and the Politics of Philanthropy*. Minneapolis, MN: University of Minnesota Press.
- Klawiter, Maren
2008 *The Biopolitics of Breast Cancer: Changing Cultures of Disease and Activism*. Minneapolis: University of Minnesota Press.
- Knaapen, Loes
2013 Being ‘Evidence-Based’ in the Absence of Evidence: the Management of Non-Evidence in Guideline Development. *Social Studies of Science* 43(5): 681-706.
- Lambert, Helen
2006 Accounting for EBM: Notions of Evidence in Medicine. *Social Science and Medicine* 62(11): 2613-2620.
2009 Evidentiary Truths? The Evidence of Anthropology Through the Anthropology of Medical Evidence. *Anthropology Today* 25(1): 16-20.
- Lantz, Paula M. and Karen M. Booth
1998 The Social Construction of the Breast Cancer Epidemic. *Social Science and Medicine* 46: 907-918.
- Latour, Bruno
1987 *Science in Action*. Boston, MA: Harvard University Press.
2005 *Reassembling the Social: an Introduction to Actor-Network-Theory*. Oxford: Oxford University Press.
- Lingard, L., K. Garwood, C.F. Schryer and M.M. Spafford
2003 A Certain Art of Uncertainty: Case Presentation and the Development of Professional Identity. *Social Science and Medicine* 56: 603-613.
- Lupton, Deborah

- 1995 *The Imperative of Health: Public Health and the Regulated Body*. United Kingdom: Sage Publications.
- McKinlay, Andrew and Jonathan Potter
1987 Model Discourse: Interpretive Repertoires in Scientists' Conference Talk. *Social Studies of Science* 17: 443-63.
- Moffat, Tina
2010 The 'Childhood Obesity Epidemic': Health Crisis or Social Construction. *Medical Anthropology Quarterly* 24(1): 1-21.
- Mol, Annemarie
2008 *The Logic of Care: Health and the Problem of Patient Choice*. London: Routledge.
- Mykhalovskiy, Eric and Lorna Weir
2004 The Problem of Evidence-Based medicine: Directions for Social Science. *Social Science and Medicine*, 59,1059-1069.
- Newby, J.A., C.C. Busby, C.V. Howard and M.J. Platt
2007 The Cancer Incidence Temporality Index: an Index to Show Temporal Changes in the Age of Onsets of Overall and Specific Cancer (England and Wales, 1971-1999). *Biomedicine and Pharmacotherapy* 61: 623-630.
- Petersen, Alan
1997 Risk, Governance, and the New Public Health. In Petersen, A. and Bunton, B. (eds) *Foucault, Health and Medicine*. London: Routledge, pp. 189-206.
- Petersen, Alan and Deborah Lupton
1997 *The New Public Health: Health and Self in the Age of Risk*. United Kingdom: Sage Publications.
- Pope, Catherine
2003 Resisting Evidence: the Study of Evidence-Based Medicine as a Contemporary Social Movement. *Health (London)* 7(3): 267-282.
- Renahan, Andrew, Margaret Tyson, Matthias Egger, Richard F. Heller and Marcel Zwahlen
2008 Body-Mass Index and Incidence of Cancer: a Systematic Review and Meta-Analysis of Prospective Observational Studies. *Lancet*, 371: 569-578.
- Rock, Melanie
2005 Reconstituting Populations Through Evidence-Based Medicine: an Ethnographic Account of Recommending Procedures for Diagnosing Type 2 Diabetes in Clinical Practice Guidelines. *Health (London)* 9(2): 241-266.
- Rose, Nikolas
1999 *Governing the Soul: the Shaping of the Private Self*. London, UK: Free Association Books.
- Ross, Brian
2005 Fat or Fiction: Weighing the 'Obesity Epidemic'. In Gard, M. and Wright, J. (authors) *The Obesity Epidemic: Science, Morality and Ideology*. London: Routledge, pp. 86-106.
- Sandaunet, Anne-Grete and Evan Willis
2012 Evidence-Based Healthcare: the Future Research Agenda. In Broom, A. and Adams, J. (eds) *Evidence-Based Healthcare in Context: Critical Social Science Perspectives*. Surrey: Ashgate, pp. 177-192.
- Sontag, Susan
1990 *Illness as Metaphor and AIDS and its Metaphors*. New York: Picador.
- Spoel, Philippa, Roma Harris and Flis Henwood

- 2012 The Moralization of Healthy Living: Burke's Rhetoric of Rebirth and Older Adults' Accounts of Healthy Eating. *Health (London)* 16(6): 619-36.
- Storeng, Katerini T. and Dominique P. Béhague
2014 'Playing the Numbers Game': Evidence-Based Advocacy and the Technocratic Narrowing of the Safe Motherhood Initiative. *Medical Anthropology Quarterly* (early view) DOI: 10.1111/maq.12072.
- Straus, Sharon, Jacqueline Tetroe and Ian Graham eds
2009 *Knowledge Translation in Health Care: Moving From Evidence to Practice*. Chichester: Blackwell Publishing.
- Swales, John
1990 *Genre Analysis: English in Academic and Research Settings*. Cambridge, England: University of Cambridge Press.
- Timmermans, Stefan and Marc Berg
2003 *The Gold Standard: the Challenge of Evidence-Based Medicine and Standardization in Health Care*. Philadelphia, PA: Temple University Press.
- Traynor, Michael
2000 Purity, Conversion and Evidence Based Movements. *Health (London)* 4(2): 139-158.
- Wendland, Claire L.
2007 The Vanishing Mother: Cesarean Section and 'Evidence-Based Obstetrics'. *Medical Anthropology Quarterly* 21(2): 218-233.