#### Energy Research & Social Science 6 (2015) 146-154

Contents lists available at ScienceDirect

## **Energy Research & Social Science**

journal homepage: www.elsevier.com/locate/erss

#### Original research article

# Fuel poverty from the bottom-up: Characterising household energy vulnerability through the lived experience of the fuel poor

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#### A R T I C L E I N F O

Article history: Received 17 July 2014 Received in revised form 4 February 2015 Accepted 12 February 2015 Available online 12 March 2015

Keywords: Fuel poverty Energy vulnerability Energy consumption Lived experience

#### ABSTRACT

Recent quantitative and qualitative evidence documents a dramatic reduction in average direct UK household energy consumption in the last decade. The 'fuel poverty gap' in the UK (average shortfall that fuel poor households experience in affording their energy bills) has also grown substantially in that period. Here we draw on the literature on vulnerability and on recent qualitative interviews with fuel poor households to characterise the experience of energy vulnerability in the UK. Using our qualitative data, we explore energy vulnerability from the point of view of our interviewees. In doing so we identify six challenges to energy vulnerability for the fuel poor: quality of dwelling fabric, energy costs and supply issues, stability of household income, tenancy relations, social relations within the household and outside, and ill health. In analysing these challenges we find that the energy vulnerable have limited agency to reduce their own vulnerability. Further, current UK policy relating to fuel poverty does not take full account of these challenges. Any attempt to address energy vulnerability coherently in the future must engage with structural forces (policies, markets, and recognition) in order to increase household agency for change.

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#### 1. Introduction

In a recent report on household energy consumption, the Office for National Statistics [1] (ONS) documented a 24% reduction in average household energy consumption in the UK between 2005 and 2011. This radical change in energy consumption in the home is likely due to a number of factors, but the doubling of energy prices for households during the period must have had a substantial effect. The ONS figures suggest that the experience of living in fuel poverty during this period has altered substantially, and indeed this is supported by government fuel poverty measures. The 'fuel poverty gap' (average shortfall that fuel poor households experience in affording their energy bills) grew from £310 to £438 in England and Wales between 2005 and 2011 [2]. Understanding how the fuel poor experience change, and how they might be supported in coping, is increasingly important.

While these statistics give us an impression of the broad trends in fuel poverty, qualitative research is essential to understand

E-mail addresses: L.K.Middlemiss@leeds.ac.uk (L. Middlemiss), ee12rg@leeds.ac.uk (R. Gillard). how change is experienced in the daily lives of the fuel poor. Relatively few qualitative studies exist that touch on the lived experience of fuel poverty or energy vulnerability [3–9]. These studies show households in the UK and Austria taking increasingly drastic measures to cope with changing circumstances. They also document a variety of experiences and responses depending on the circumstances of the household in question. Certainly, these studies suggest that the experience of fuel poverty is dynamic, and that it can be exacerbated or ameliorated by many factors, from energy efficiency to the social life of the household.

To date, the detailed insights available in qualitative work have not been drawn on in debates on the nature of fuel poverty. As a result, the problem of fuel poverty tends to be defined by macrolevel indicators, such as the 'fuel poverty gap', as opposed to a richer picture of the lived experience uncovered in qualitative work. Recent use of the term 'energy vulnerability' in the study of fuel or energy poverty, pioneered by Stefan Bouzarovski and colleagues at Manchester University [10], has the potential to open up a more complex and dynamic understanding of people's relationship with energy. There are links here to the broader literature on vulnerability, which attempts to understand how threats to people's integrity can be measured, understood and mitigated against [4,11–13]. The term 'energy vulnerability' lacks a clear definition, however. There

http://dx.doi.org/10.1016/j.erss.2015.02.001

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is an opportunity here: to build a definition of energy vulnerability from the bottom-up, drawing on insights from qualitative work.

In this paper we aim to do just that: bringing together the wider literature on (energy) vulnerability, and our own qualitative study of the lived experience of fuel poverty in the UK, to explore the meaning of energy vulnerability from the bottom-up. First, we want to understand 'what are people vulnerable to?' from the point of view of our respondents. We address this by identifying six key challenges to energy vulnerability for the fuel poor: quality of dwelling, energy costs and supply, stability of household income, tenancy relations, social relations within the household and outside, and ill health. Second, we want to explore how such an understanding might be translated into a means of identifying and alleviating conditions for the energy vulnerable. We address this in the discussion where we find that many of the ways of reducing vulnerability identified in our research are heavily reliant on structural changes, rather than on the agency of the household itself. Our six challenges to energy vulnerability are a useful starting point for household-level assessment of energy vulnerability. They also have value in analysing the potential of existing and future policy in this area. We argue that our analysis allows us to identify both household level and more structural causes of vulnerability to ensure a critical (and indeed realistic) assessment of the potential for reducing vulnerability.

While this paper draws on UK experiences of fuel poverty, the globalised nature of both energy prices and the current financial crisis, means that research in the UK is likely to be relevant elsewhere, particularly in similarly developed nations. While there will be variation in levels of income inequality, and in the impact of the financial crisis, we can anticipate that the energy vulnerable in such nations are experiencing change that needs to be understood. Certainly the framework we present in the form of 'key challenges to energy vulnerability' might prove a useful starting point for investigating these issues elsewhere.

#### 2. Energy vulnerability and the lived experience

#### 2.1. Characterising energy vulnerability

In fuel poverty research to date, there is limited engagement with the term 'energy vulnerability'. To date there are no clear definitions of energy vulnerability, or discussion of the distinction between the two terms. We begin here by building a definition of energy vulnerability drawing on theory, and then complicating this with reference to work that discusses vulnerability from a lived experience standpoint.

In this paper we understand fuel poverty to be a state of being: while the precise definition of this concept is contested [14], it fundamentally captures the inability of certain households to acquire the energy services required to live a decent and healthy life. As a starting point for defining 'energy vulnerability', we turn to the substantial area of vulnerability research, which focuses on the potential for future harm, exploring a person, household or community's likelihood of exposure to harm, sensitivity to that harm and capacity to adapt in response to it [13]. Research on vulnerability to climate change takes a similar starting point [12]. If we build on this work for the concept of energy vulnerability this translates to: the likelihood of a household being subject to fuel poverty, the sensitivity of that household to fuel poverty, and the capacity that household has to adapt to changes in fuel poverty. Given the dynamic nature of all three of these concepts, it is likely that the energy vulnerability of a given entity (household/individual/community) is subject to change over time. Finally, such an analysis of energy vulnerability suggests that different

#### Table 1

Spiers's attributes of emic vulnerability and their application in an energy vulnerability context [11, quotations from p. 719].

Spiers's attributes of emic vulnerability	Definitions	Application to energy vulnerability
Integrity	"the person's sense of soundness in the various dimensions of her or his life."	The ability to keep warm/cool and therefore live a decent life.
Challenge	"Vulnerability is experienced when there is a perceived challenge to integrity with a corresponding uncertainty about the ability to respond adequately."	Anything that challenges a household's ability to keep warm/cool.
Capacity for action	"Capacity for action refers to the individual's perceived ability to withstand, integrate or cope with the challenge."	How a household copes with (and perceives itself coping with) the challenges to its ability to keep warm/cool.
Multi-dimensionality	"the fact that vulnerability varies from one person to another and from one experience to another"	The fact that energy vulnerability is experienced differently by different people in different circumstances.
Power	"the extent to which a challenge directs or constrains action, and the extent to which the person perceives the potential for change"	The extent to which challenges allow a household to act to avoid energy vulnerability, and the household's perception of their own agency on energy matters.

households will hold different degrees of vulnerability, according to their exposure, sensitivity and adaptive capacity.

Some aspects of this theoretical characterisation of energy vulnerability have been discussed by fuel poverty scholars, albeit using different terminology. *Exposure* to fuel poverty, in particular, has been repeatedly characterised by scholars. Boardman's widely accepted categorisation lists the 'determinants' of fuel poverty as household income, cost of fuel, and the energy efficiency of the dwelling [15]. Changes in exposure to these three determinants will affect a household's energy vulnerability. There have also been some attempts to capture variation in fuel poverty gap' [2] and Walker et al.'s typology of fuel poverty by percentage of salary spent on fuel [16] describe financial variations between households. In all of these examples, fuel poverty is understood in categories relevant to experts and policy, rather than by looking at the experiences of the fuel poor themselves.

A definition of energy vulnerability built from theory feels rather unsatisfactory, particularly to a qualitative researcher. The concepts fail to take into account the complexity of the lived experience of fuel poverty and energy vulnerability. In order to address this, we engage a more bottom-up approach to defining vulnerability. In looking for bottom-up approaches to vulnerability we came across Spiers's work on vulnerability in a nursing context. Spiers identifies a set of five attributes that relate to an 'emic' understanding of vulnerability, meaning "the description of the phenomena as understood by the person" [11, p. 716]. Spiers's attributes are summarised in Table 1, together with an interpretation of those attributes in an energy context. While Spiers's starting point is vulnerability in an unrelated field (nursing), translating her approach into energy vulnerability is highly valuable because it allows us to begin to define this based on the lived experience of the fuel poor: i.e. from the bottom-up.

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