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Short communication

Health, vulnerability, and energy: Assessing energy markets and consumer agency in New Zealand

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ABSTRACT

Vulnerable consumers are defined as those at a disadvantage in a market place because they are not in control of their situation in a market exchange. We examine the self-efficacy of consumers who require the use of additional energy for medical reasons. Using data from two household national surveys in New Zealand carried out in 2011 and 2014 we demonstrate that medically vulnerable consumers have lower levels of self-efficacy in relation to energy decisions than non-medically vulnerable consumers. Consumers with low self-efficacy are less likely to manage their situation effectively. Current policy in New Zealand and elsewhere in the world requires vulnerable consumers to take action themselves which is less likely with low self-efficacy.

1. Introduction

In this paper we examine the relationship between self-efficacy, an individuals' confidence in their ability to carry out a necessary action to reach a desired goal [4], and consumers who require additional electricity for medical reasons, referred to as 'medically vulnerable consumers' (MVCs). Various health conditions require consumers to use additional electricity. Some require extra electricity for heating and or washing while others require electricity to operate equipment such as dialysis. Requirements for extra heating, washing or drying may significantly increase the amount of energy the household needs to use while other needs, such as a hospital bed, do not use significant additional electricity but require a continuity of supply that places consumers in a vulnerable position.

Breaks in energy supply have resulted in MVCs becoming unwell and have contributed to fatalities [9,12]. A report by the European Commission's vulnerable consumers working group discussed the need for protection for vulnerable consumers, including assurance to consumers who need constant energy for medical equipment that their supply will not be disconnected [8]. As a result, the electricity companies in the United Kingdom operate a Priority Services Register which can entitle MVCs to additional support. Indeed, it is an international recommendation that a register of MVCs is kept so that support can be given to these consumers in the event of a break in energy supply, however, in most countries these databases don't exist [24]. Moreover, guidelines on who should be responsible for developing this register are lacking, and as is the case in Europe, registration on the list appears to be the consumer's responsibility [6,16].

The ability of MVCs to add themselves to a register of consumers medically dependent on continuous power supply is arguably dependent on self-efficacy and a direct test of self-efficacy in the context of MVCs has never been carried out. Vulnerability was linked to self-efficacy as early as the 1980s [23]. Schwarzer and Fuch's [21] review of health related cognitions also supports the idea that the constructs should be related. Moreover, chronically ill individuals experience powerlessness and insecurity that extends well beyond their medical health [2]. Thus the question arises as to how MVCs perceive their self-efficacy in relation to improving their energy decisions, and presumably reducing longer term vulnerability. Understanding if self-efficacy might be lower among MVCs could have a significant bearing on how policy might be developed to cater for the needs of MVCs. Specifically, if MVCs are found to have reduced self-efficacy, policy could be put in place to identify and register MVCs as medically dependent on electricity and remove responsibility from the consumer.

2. Background

Energy research has generally not examined vulnerable consumers except within the specific topic of fuel poverty (e.g.

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[5,17,19]), defined by the World Health Organisation as the need to spend more than 10% of a household's income on energy supply [22]. Snell et al. [26] use the concept of justice to explore issues relating to fuel poverty and disabled people in the United Kingdom but little is known from existing research that helps understand the particular characteristics of vulnerable consumers in the energy context. The idea of consumer vulnerability is essentially set in the notion that the consumer is at a disadvantage in the market exchange relationship for reasons that are beyond their control [1]. Arguably in a modern society every household needs access to electricity, at least as an energy source, but MVCs will experience less control than other consumers over their requirements. Smith and Cooper-Martin [25] make the point that classifying people as vulnerable because of characteristics, such as health status, is an example of 'perceived vulnerability' as opposed to offering any understanding of 'experienced vulnerability'. Baker et al. [3] give the most extensive review and explanation of the nature of consumer vulnerability and demonstrate that in its widest context it can be multi- or unidimensional, enduring or transient, and general or context specific. In this paper we are clearly looking at the specific context of energy consumption and the data available for our research presumes the medical vulnerability is enduring. However, in any form it is reasonable to expect that, since increased vulnerability is in part at least defined by reduced control, MVCs will demonstrate lower levels of self-efficacy in relation to energy decisions. In the energy literature the most comprehensive review that discusses self-efficacy and decision making is that by Wilson and Dowlatabadi [28]. This hypothesis is consistent with their summary (p. 179).

As discussed earlier, governments and activists have not ignored MVCs, however, questions remain regarding whether current policy is adequate. In July 2007 the New Zealand (NZ) Electricity Commission (now the Electricity Authority) issued revised guidelines to cover procedures and policies for medically dependent consumers [7]. Similar to the process in Europe, the consumer's responsibility for advising their electricity company of medical dependency is emphasised. The recent European Union discussion report [19] discusses the need to develop approaches to identify vulnerable consumers in general as opposed to relying on consumer initiated notification.

The revised 2007 guidelines in NZ and were prompted by the unfortunate death of Mrs Folole Muliaga in May of that year [13]. Mrs Muliaga died a few hours after the electricity to her home was disconnected for non-payment of her account. Mrs Muliaga had a number of health problems and had a BiPAP machine to assist her breathing which could not be operated without an energy supply. The Inquiry into her death found that the disconnection was not the direct cause of death but possibly contributed through additional stress. It also ascertained that the electricity company had never been advised that she was medically dependent on electricity and also that many of her support people were unaware she was having difficulty paying her electricity account. By the time the subcontractor was informed of a health issue at the actual time of disconnection, there was a case history of non-payment and actions for disconnection were well established [18]. It has been suggested that Mrs Muliaga's Samoan culture had some influence in making the family reticent in seeking help [14]. Whatever the specific reasons behind this it is reasonable to presume that this would be reflected in low self-efficacy in this context.

If low self-efficacy regarding energy decisions is a general feature of MVCs then the principle of consumer responsibility underpinning the Electricity Authority guidelines will always be challenging for some consumers to respond to. In a separate case known to the researchers, where the wife of a university professor suffering from motor neurone disease was medically dependent on electricity, it was the electricity company who initiated the registration as medically dependent in 2012 after contacting the customer noticing a significant increase in consumption by the household. The actions of the electricity company in this case are to be applauded while the customer admitted that lack of control of their overall situation had led to their inactivity in being registered as a medically dependent consumer (MDC).[1] The main research hypothesis proposed in this paper is that MVCs will exhibit lower levels of self-efficacy in relation to energy choices and behaviours compared to non MVCs.

3. Methodology and data

An opportunity to test this hypothesis arose using data from two NZ national surveys of energy behaviour and practises which were carried out as part of a larger energy research programme.[2] The first was carried out early in 2011 (n = 2439) and the second in April 2014 (n = 2753). Both surveys asked the same questions concerning the use of additional energy for medical reasons, that is identifying MVCs, but they did not confirm households officially registered as MDC. This is not material to testing the hypothesis since those officially registered as MDC will be drawn from those identifying themselves as requiring additional energy and testing the self-efficacy of this group is essential to the possible policy responses that might be needed. The first survey included a six item self-efficacy scale (alpha = 0.793) that was designed and tested for that survey since no published self-efficacy scale for energy decisions was found. Five of the items were repeated in the second survey (alpha 0.734.).[3] MVCs are compared with non-MVCs on all the repeated items and on the average efficacy in both surveys. Data for both surveys were collected online using two different commercial market research companies and quotas were established to ensure they were representative of the wider population in terms of household income, geographic location and ethnicity.[4]

Data were analysed using procedures from the IBM Statistics package 21—independent samples *t*-tests, Mann-Whitney tests and cross tabulations with chi-square tests. Because of the large sample sizes all statistically significant differences reported are below p = 0.001.

4. Results and discussion

The number of households identifying themselves as requiring additional electricity for medical reasons for at least one of their members was almost identical in both surveys: 8.9% in 2011 and 8.2% in 2014. We have no comparative data which we can use to assess the magnitude of these numbers but they clearly identify medical vulnerability as a non-trivial issue for energy policy. The largest number of households require extra energy for heating, followed by electricity for the operation of medical appliances (Table 1).

The importance of extra heating in these figures may be a comment on the relatively poor standards of many NZ homes which have poor thermal properties leading to cold, damp conditions

[1] The Authority uses the term Medically Dependent Consumer (MDC) to describe those officially registered with their electricity provider as requiring continued supply for health purposes.

[2] Data for this larger programme was funded by the New Zealand Ministry of Business, Innovation and Employment.

[3] We believe the omission of the 6th item in 2014 was simply an administrative oversight but the consistency of the responses to the remaining items and the overall satisfactory performance suggests that this does not make a material difference to the hypothesis tested.

[4] The internet is widely used in New Zealand and 77% of New Zealander's have internet access in their home [27].

[5] Purposes sum to more than total because of multiple responses.