

# Fuel Poverty Awareness: A Preliminary Study of New Zealand Tenants

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## ABSTRACT

Fuel poverty is an issue that has been documented to affect many low-income households in New Zealand. Many studies have shown the effects of fuel poverty to include health and mortality issues during winter periods in the country. To eradicate fuel poverty, sufficient information should be provided to not only decision makers but those directly affected – low-income earners. This study is aimed at investigating the level of awareness of low-income earners to fuel poverty and its effect on their health and comfort. A two-stage survey was carried out on tenants in low-income tenants within Auckland city. This survey involved a questionnaire survey of tenants and physical observation of tenants' households in Auckland City, New Zealand. The results show that there is insufficient awareness of fuel poverty amongst tenants. Also, the majority (80%) do not seek advice on fuel poverty and the associated effects. The results further showed that there is still evidence of fuel poverty in these households. The implication of this study calls for more efforts to be made by the appropriate authorities to inform the public, in particular, those affected, about fuel poverty. This pilot study was carried out on a small population of low-income earners. More studies are required across the country for the results to be generalised.

**Keywords:** Fuel poverty, Low-income, New Zealand, Tenants

## 1 Introduction

Fuel poverty can be defined as the inability to afford adequate warmth at home (Lewis, 1982). While this classic definition has been criticized (Waddams et al., 2012) as not capturing fuel poverty in totality and modified to suit the current state of arts (Lloyd, 2006; O'Sullivan et al., 2015), it remains the easiest explanation over the years. The significance of fuel poverty stems from its impact, directly and indirectly (Shaw 2004), on the household and their overall wellbeing. It affects not just the physical health but social, emotional and psychological stability of the individual. Studies have shown various effects of fuel poverty to include health hazards such as respiratory and skin problems (Rankine, 2005, Dear & McMichael, 2011), depression (Harrington et al., 2005; Liddell & Morris, 2010, Lawson et al., 2015) and even deaths (Howden-Chapman et al., 2012; Davie et al., 2007). New Zealand has been noted among developed countries to have the second highest rate of asthma (Taptiklis & Phipps, 2017) as one out of four children is prone to asthma.

Tackling fuel poverty in households relies on the ability to mitigate three major factors – household income, thermal performance of the dwelling and the price of energy required to keep the dwelling warm. These factors are interdependent and determine whether a household is fuel poor or not. The thermal performance of a house represents its ability to retain much-needed heat to keep the indoor environment warm without any additional heating system. It is dependent on some features including the building design and materials (walls, floors and roofs). While the World Health Organisation (WHO) requires a house to maintain an acceptable standard of 18oC indoor temperature to be considered warm (MBIE, 2018), Lloyd (2006) suggests a heating regime level of 21oC in the main living area and 18oC in other occupied rooms. However, in 2006, only 9% of a documented 386 dwellings in New Zealand met the WHO standard for indoor temperature (Isaac et al., 2006) and in 2015, about 4500 people surveyed believed that their houses were too cold (Statistics New Zealand, 2015).

It can be said that fuel poverty affects mostly low-income

## PROCEEDINGS

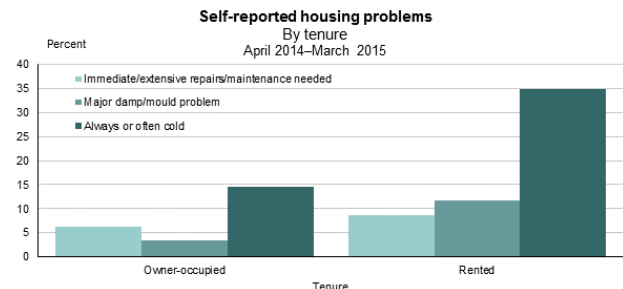
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earners (Moore, 2012; Isaac et al., 2010, O'Sullivan et al., 2015). This is mainly related to living in poorly insulated houses that require more energy to heat up and the high cost of energy. Energy bills potentially take about 16% of the earnings of low-income earners (Power, 2005). In fact; according to Phipps, (2017), fuel prices in New Zealand rise faster than occupants' income. Isaac et al., (2006) found that only about a third of households in the lowest income quintile achieved an average living room-evening-winter temperature of above 16°C. This demography represents a large percentage of the New Zealand population. As noted by Howden-Chapman et al., (2012), it is estimated that around a quarter of households in New Zealand suffer from fuel poverty to some degree. Occupants of low- income houses spend three times more than average on energy bills relative to income (Wilkinson et al., 2001).

In New Zealand, low-income earners are those who have an annual income of less than 60% of the national median income (\$48,800 a year or \$23.50 per hour in 2016) after housing costs (Statistics New Zealand, 2017). A majority of those that fall into this category are residential housing tenants comprising many of students, immigrants and low-income workers. Studies have shown a link between this group of the population and fuel poverty. For instance, Isaac et al., (2006) observed that dwellings that achieved an average living room temperature of less than 16°C, were more likely occupied by tenants rather than actual homeowners. The BRANZ 2015 House Condition Survey of almost 600 houses showed that rental properties were twice as likely to smell damp than owner-occupied houses and nearly three times as likely to feel damp (White & Jones, 2017). According to Howden-Chapman et al., (2012), those on low incomes are more likely to rent and rental properties are predominantly older housing stock. Buckett et al., (2012) noted that almost twice the amount of tenant-occupied houses were found to be in poor condition, meaning they need attention in the next three months. In 2015, Statistics New Zealand found a significant relationship between colder dwellings and tenant occupiers (Figure 1).



**Fig 1: Housing problems per Tenure in New Zealand Homes (Stats NZ, 2015)**

The NZ government has attempted to tackle fuel poverty in various ways. An example is The Household Energy End-use Project (HEEP) which was established in 1995, to monitor energy use and indoor environmental quality in NZ houses for ten years<sup>1</sup>. Based on the findings of HEEP and other studies within the country, various strategies have been introduced. Example, the New Zealand Standard for installing insulation (NZS 4246:2016) was established to guide the correct installation of insulation products to achieve the intended thermal performance in residential houses. Also, insulation statements are now required, effective from July 2019, on all tenancy contracts, wherein the landlord must disclose whether there is insulation in the rental home, where it is, what type and what condition it is in so that tenants can make an informed decision (Tenancy Services, 2017). Furthermore, the government has initiated a programme called “The Warm Up New Zealand: Healthy Homes” which offers 55% insulation subsidies for low-income homeowners and landlords with low-income tenants in homes built before 2000 (Smart Energy Solutions, 2018). While these are good initiatives, it is important that tenants have a good understanding of fuel poverty and its effects for these initiatives to be effective. Lloyd (2006) pointed out that the New Zealand government has not done enough to provide those affected by fuel poverty with information, specifically on the relevant health issues. While the study above was carried out over a decade ago, there has not been any follow-up study to ascertain whether the public’s awareness of fuel poverty has improved. Hence, the public may still be naïve to the dangers associated with being fuel poor. This study provides quantitative proof of current public awareness of the fuel poverty. Also, despite the intervention strategies employed by the government, there may still be

<sup>1</sup> More on HEEP can be found at <https://www.branz.co.nz/heap>.

significant fuel poverty in low-income households. Hence, this study asks the question:

1. Are tenants aware of fuel poverty and its effects?
2. Are tenants of rented low-income households still fuel poor?

This study provides more information on fuel poverty and its effects. It was aimed at ascertaining whether tenants are still affected by fuel poverty and further establish whether that there is currently, significant evidence of fuel poverty in low-income homes. To answer the questions asked and achieve the aim of this study, a field investigation is conducted on house tenants in Auckland city, New Zealand. The significance of this study is that it is focused on a current urgent issue in the country – fuel poverty. As indicated by Howden-Chapman et al., (2012), fuel poverty is a significant contributor to New Zealand’s high winter mortality rate and hospitalisation. It is hoped that the findings of this study will be informative to decision makers and assist in developing appropriate strategies towards the total eradication of fuel poverty from the country.

## 2 Data collection and results

This study was carried out in Auckland, New Zealand. This city was chosen as it is the business hub of the country (Rasheed et al., 2017) and has a significant number of tenants. Two stages of survey were carried out. Firstly, an online questionnaire survey targeting 50 tenants across Auckland city was undertaken to establish the awareness of tenants on fuel poverty and its effects. This number of response survey is representative of tenants in Auckland city. Conducting an online survey assisted in avoiding researcher’s bias (Kothari 2004) – common limitation of questionnaire surveys. This was carried out through surveymonkey.com. Secondly, a field survey was carried out on 50 rented houses using a paper-based questionnaire and pictorial observation of the evidence of fuel poverty. Questionnaires have been shown to be an appropriate tool to retrieve occupants’ perception of their environments (Hodges et al., 2016, Rasheed & Byrd, 2018).

A random sampling technique was adopted (Kelley et al., 2003) and a target of 50 participants was set for each stage of the study as a subset of tenants in Auckland city (Sekaran & Bougie, 2009). This number is deemed accepted. The data collected was statistically analysed using simple descriptive analysis methods. The findings are presented and discussed in the following sections.

### 2.1 Stage 1 - Online survey of tenants’ awareness to fuel poverty

The total of 50 responses from the online survey received were deemed appropriate for analysis. The remaining respondents did not fit into the selection criteria for this survey. The selection criteria were:

- a. The living status of the participant (tenant or house owner),
- b. The annual income and
- c. The age of participants.

It was important that the participants are current tenants with an annual household income of below \$49,999 (Statistics New Zealand, 2017) and aged above 18 years (adults). Out of the 50 responses, 66% are females while 60% are 25 years and above. Majority of the respondents occupied houses that were over 20 years old and all of them had an income below \$49,999 (Table 1).

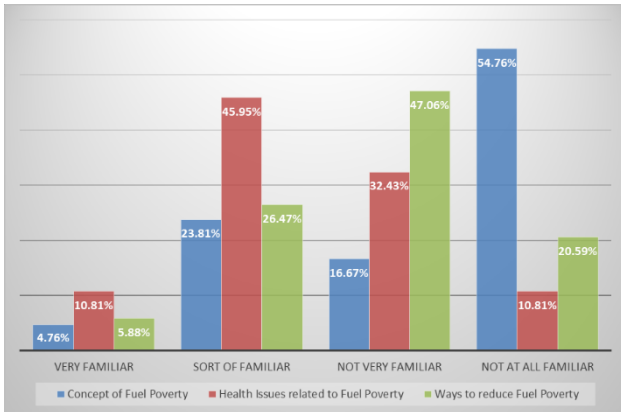
**Table 1: Background information on online survey**

	respondents	
	<i>Respondents’ background information</i>	
<i>Sex</i>	Females (66%)	Male (34%)
<i>Respondents’ age</i>	18 – 24 years (60%)	25 years and above (40%)
<i>Age of house occupied</i>	Above 20 years (68%)	20 years and below (32%)
<i>Income</i>	\$0 - \$24,999 (54%)	\$25,000 - \$49,999 (46%)

#### **Awareness of fuel poverty**

To establish the awareness of respondents to fuel poverty, they were asked to indicate how familiar they are with the concept of fuel poverty. As shown in the figure below, about 72% indicated that they are not familiar with the concept of fuel poverty. Those who were familiar with fuel poverty (57%) identified the internet as their main source of information.

For the question on familiarity with the health effects of fuel poverty, about 57% indicated that they were familiar with the associated health issues of fuel poverty. The nature of health issues identified were majorly physical (94.74%), followed by psychological (42.11%) and social (31.58%). However, only 33% of the participants who indicated familiarity with fuel poverty and associated health issues were confident of the strategies to tackle fuel poverty.

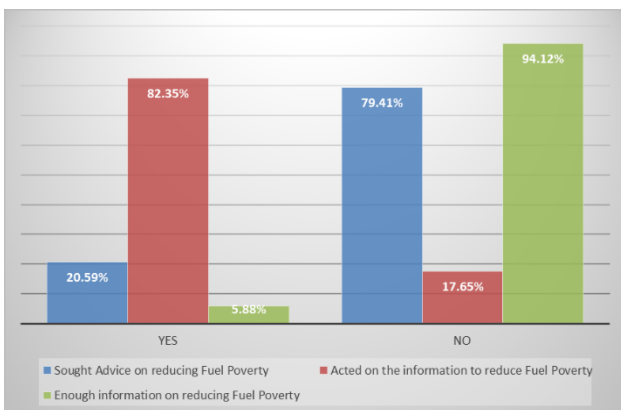


**Figure 2: Awareness on Fuel poverty and associated health issues**

**Information on Tackling Fuel Poverty**

As shown in the figure below, a significant 79.41% of the participants noted that they had not sought any advice on how to tackle fuel poverty in their houses. Most of the participants had no reason why they haven't sought advice (23%); others stated that finance was a reason while some felt they had no need for the advice (19%). The rest of the participants were unaware of where to seek advice from, unaware that fuel poverty exists or unaware that advice is available.

Finally, those who had sought advice on fuel poverty were asked whether they had acted on this advice, and if they had, what strategies have been employed. It was interesting to observe that about 83% of participants had not acted on the advice they received. For the 17% who indicated that they had acted on the advice given, the strategies employed included installation of curtains to reduce heat loss, using more energy efficient heaters and using heaters at smarter periods.



**Figure 3: Tackling Fuel Poverty**

**2.2 Stage 2 - field survey of rented low-income households**

To establish the existence of fuel poverty and its effects, a household is expected to have poor thermal performance, and experience associated health symptoms and financial constraints to keeping the home warm when required (Lloyd, 2006; Fellegi & Fülöp, 2012). As such, this field survey was carried out to assess the existence of these factors amongst the occupants of rented apartments (tenants). These set of participants were selected as they are made of up low-income earners (Isaac et al, 2006). The participants were located in Auckland city and were selected through emails and personal requests. Majority of the participants in the 50 apartments surveyed have resided in their current houses for more than one year (76%). These houses have mostly 4 or more occupants (62%) per household including infants, adult and the elderly.

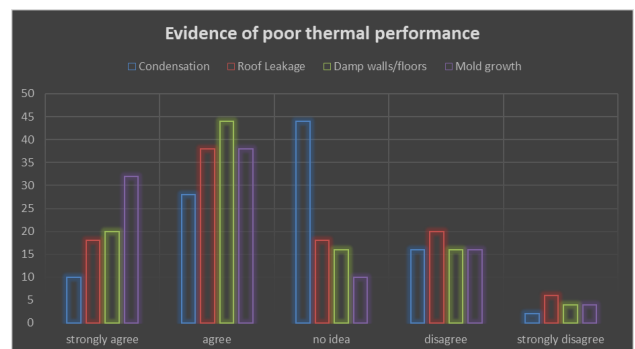
**Table 2: Background Information on participants**

Residence tenure	More than one year (76%)	Less than one year (24%)
Occupants per household	2 and 3 occupants (38%)	4 or more occupants (62%)

**Thermal performance in low-income homes**

The participants were asked questions about the thermal performance of their homes.

Firstly, the participants were questioned on their familiarity with common evidence of the existence of poor thermal performance in houses– condensation, leaking roof, mold growth and dampness in their houses (Shannon et al., 2003; Howden-Chapman, 2004, Canterbury District Health Board, 2012). Most of the participants agreed that they experience leaking roofs, mold growth and dampness in their houses (Figure 4).



**Figure 4: Evidence of poor thermal performance**

To verify their responses, the participants were asked to

show evidence of presence of mold growth, condensation, roof leakage or damp walls/floors in their households. The following pictures represent the evidences of observed poor thermal performance in these rental households.



Figure 5: Indication of mold growth and dampness on walls/floor found in some of the participants' households

**Associated health symptoms**

The participants were asked to identify health symptoms they have experienced living in their houses. Majority of the participants stated running nose (22%), sore throat (17%) and sneezing (19%) as the most common symptoms they experience in their homes. These were followed by blocked nose (9%), depression (8%) and coughing (8%).

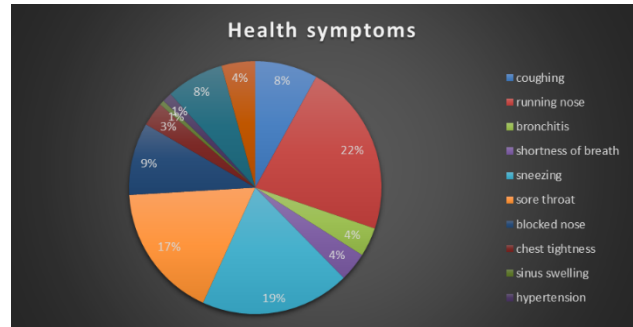


Figure 6: Health symptoms experienced by participants

**Evidence of Fuel poverty – Fuel affordability**

The participants were asked questions that indicated inability to provide required warmth in their homes. The tables below (table 3) show the responses of the participants to the questions asked.

Firstly, the participants were asked the question “in the past 12 months, have you put up with feeling cold to save on heating expenses?” The majority (58%) of the participants in both types of residents answered “Yes” to this question.

Next, the participants were asked how often it is difficult to afford the fuel expenses in their homes. Thirty percent (30%) of the participants answered “never” while 24% answered, “occasionally”. Twelve percent (12%) answered “quite often” while 34% answered, “very often”.

The final question asked about the level of financial stress experienced by the participants after paying their energy bills. Most of the participants indicated that they somewhat felt (28%) and moderately (36%) feel financially stressed after paying their energy bills.

Table 3: Experience of fuel poverty amongst participants

Financial issues	Response				
	Yes	No			
Putting up with cold to save on heating expenses	Yes (58%)	No (42%)			
Difficulty in affording the fuel expenses in their homes	Never (30%)	Occasionally (24%)	Quite Often (12%)	Very often (34%)	
Level of financial stress experienced after paying their energy bills?	None (16%)	Slightly (14%)	Some what (28%)	Moderate (36%)	High (6%)

### 3 Discussion

The results of this study suggest that while there are ongoing efforts to tackle fuel poverty, there is still limited public awareness of its existence and measures available towards its eradication. The results also indicate that majority of the people affected by fuel poverty do not know what it means to be fuel poor, are not confidentially sure of the associated health issues and how to tackle or mitigate fuel poverty in their homes. It was also noted that 60% of the participants are 18 -24 years old. This signifies a troubling risk if young adults are ignorant of an issue that has a huge impact on the economic health of the country. Rankine (2005) noted that the young and the elderly are more vulnerable when it comes to physical health effects caused by fuel poverty. The implication is that this proves that sufficient efforts have not been directed towards increasing public awareness of fuel poverty. Another implication is that public ignorance can hinder or slow down the various efforts by the government to curb fuel poverty. The findings supports Lloyd's (2006) suggestion that the government needs to do more to make the public aware of fuel poverty and its effects. It is not enough to have information available on the internet; public jingles on media are required as this will assist in sending the message home.

It was also shown that some of the respondents have not sought advice on how to deal with fuel poverty because they do not know that advice on fuel poverty exists, where to get advice or think it requires money to get advice. This could be related to the fact that there is low public awareness on the issue – *a problem unknown cannot be solved*. The public should be informed of various ways of controlling the indoor temperature since it influences thermal comfort as experienced by the occupants (O'Sullivan et al., 2015). Avenues for advice as well as more information should be made more available and reachable to the public through the media, relevant tenancy documents and other avenues.

The stage 2 survey on tenants indicates that all of the participants surveyed can be termed to be fuel poor (see section 2.2). The results showed that most of the occupants experienced mold growth, leakage of roofs, condensation and damp wall/floor in their houses. The participants also acknowledged experiencing health symptoms in their houses. Some health symptoms were common amongst the tenants such as sneezing, running nose, depression and sore throat. This finding supports already existing research on the health effects of fuel

poverty (Shannon et al., 2003). It is however interesting to note that these symptoms still exist despite over a decade research on its existence and prevalence in the country. It also indicates that the authorities have not done enough to tackle this issue. According to Howden-Chapman (2012), one in four New Zealand households may still be experiencing fuel poverty.

Furthermore, this study showed that most of the participants have had to put up with feeling cold to save on heating expenses (58%). A probable reason could be low-income tenants may find it difficult to afford heating appliances and/or do not want to deal with high electric bills as a result of frequent use of heating appliances. As observed by White & Jones (2017), rental households have less access to more cost-effective heating appliances (heat pumps, wood burners and flued gas heaters) than owner-occupiers. The authors added that rental households were more reliant on portable heaters (unflued gas heaters), which are typically more expensive to run, less effective for heating larger living spaces and are known for their risks to occupant health. This could also explain the health symptoms identified by the participants of this study.

It is interesting to note that a significant percent (54%) do not always find it difficult to afford the fuel expenses in their homes. A plausible reason could be that the tenants have become used to the practice of paying for fuel and always factor it in as a reoccurring expense. Also, as tenants, energy bills may be part of the tenancy agreement and have to be paid to the landlord or the energy providers to retain the tenancy. This also could explain why the participants indicated that they experience financial stress after paying their energy bills. To answer the questions set for this study, we can deduce that most tenants are unaware of fuel poverty and its effects; and they are still fuel poor despite the efforts made by the authorities to tackle fuel poverty. That said, we acknowledge that this study has been conducted a small sample of the wider New Zealand population. It would be highly beneficial for this study to be replicated in other cities in the country to ascertain whether the results found would be similar and thus, generalizable.

### 4 CONCLUSION

The need to tackle and possibly eradicate fuel poverty in New Zealand cannot be overstated. The effects of fuel poverty on health and thus economy of the country make it an issue that should be prioritised. The study described

in this paper further proves that fuel poverty is still prevalent in households despite government's effort to deal with it. The reason could be related to the ignorance of the most affected –tenants. Hence, it is recommended that more efforts should be channelled towards increasing the awareness for the public to fuel poverty. A nationwide educational campaign on fuel poverty should be launched targeted at not just low-income tenants or households but all New Zealanders, covering all areas of fuel poverty such as how to identify if your household suffers from it, what the associated health effects are, and what steps can be taken to reduce or remove the effects. Also, instruments to help improve the thermal performance of homes such as heaters, curtains, insulation, or perhaps double glazing, could be offered by the government to those who are most financially crippled for a subsidized amount. This would allow people to help themselves, without being put off because of high costs. This study has investigated a limited number of the population. As such, its findings cannot be generalised across the country. More studies across the country should be carried out to ascertain public awareness and familiarity with fuel poverty.

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