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Cooking fuel conservation practices adopted by selected homemakers

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Abstract

There are many factors influencing the efficiency of cooking like the phenomenon of heat production, heat utilization, heat transmission and heat rejection during combustion. The basic principle of fuel conservation is to direct maximum heat into the food and allow minimal heat to escape. The fuel efficiency of cooking can be significantly increased with a few simple practices. However a consistent habit of fuel conservation techniques would be very effective even without the use of alternate sources of fuels. The study entitled "Cooking fuel conservation practices adopted by selected homemakers" found that majority of the homemakers were aware of the consequences of fuel shortages but they were not having proper idea about its conservation techniques or less usage. An informational package was developed to provide useful and applicable practices for the homemakers regarding the conservation of fuel.

Keywords: conservation, consequences, fuel efficiency, strategies

Introduction

There has been a progressive increase in the number of households moving over to cleaner fuels for cooking in accordance with the rise in the living conditions of the urban and rural class in India especially Kerala. This has created a dramatic growth in LPG connections in the state compared to the use of the conventional cooking fuel in Kerala, which is firewood. This rise in LPG connections has also led to severe shortage in its availability at several times in a year. Cooking requires the transformation of the potential energy in fuel into heat energy, which is influenced by factors, like the phenomenon of heat production, heat utilization, heat transmission and heat rejection during combustion. The basic principle of fuel conservation is to direct maximum heat into the food and allow minimal heat to escape. This project intends to collect such data and to formulate a list of recommendations that may be adopted by households in order to conserve cooking fuel especially LPG (Pachauri, 2002) ^[4].

Objectives.

1. To find out the type of fuel most commonly used.
2. To find out the amount of money spent on household fuel.
3. To find out quantity of cooking fuel used by each household
4. To collect tips for energy /cooking fuel conservation.
5. To develop an informational C.D on fuel conservation techniques.

Methodology

The study was conducted in Thrikodithanam Gram Panchayat of Changanacherry Taluk. For this study 50 households were selected randomly and the respondents were women of the house who were mostly responsible for handling the family cooking. The investigators used a pre structured questionnaire to collect information regarding the various aspects of the study. An informational package was developed after compiling the data obtained to provide awareness.

Result and Discussions

The findings of the study are as follows

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1. Socio-economic status of the respondent

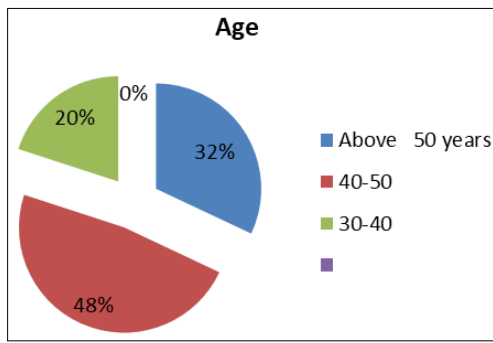


Fig 1

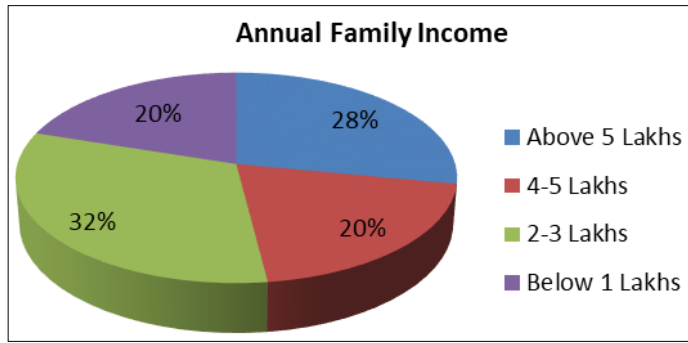


Fig 2

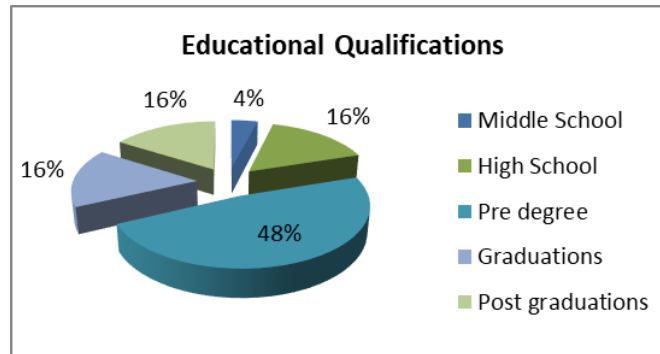


Fig 3

Background information collected include the age, educational level, employment status, annual income, and size of the family, physical and cultural aspects.

2. Fuel usage pattern

| Factors | Details | Percentage of households |
|---|----------------------------------|--------------------------|
| Types of fuel used | LPG | 24 |
| | Firewood | 20 |
| | Both LPG and Firewood | 52 |
| | Both Kerosene stove and firewood | 4 |
| Monthly Fuel Consumption Level | 1 cylinder | 48 |
| | 2 cylinder | 12 |
| | More than 2 cylinder | 40 |
| Monthly Expenditure on Fuel | Above 400/- | 72 |
| | Above 800/- | 28 |
| Awareness regarding fuel shortage and its after effects | Yes | 16 |
| | No | 84 |

Fifty two percent of the households used both LPG and firewood as fuel for cooking, while twenty four percent used only LPG. About twenty percent of the houses still use firewood only for cooking, and four percent of them used both kerosene stove and firewood as cooking fuel.

Monthly consumption level of the gas varied, about forty eight percent of the families used one cylinder per month while forty percent of the families required more than two

cylinders in a month. Seventy two percent of the households spent Rs 400 for fuel in a month while twenty eight percent of them spent above Rs. 800 in a month. Very few of them were aware of the fuel shortage and the after effects of fuel wastage and its impact on the environment.

3. Determinants of fuel usage

| Determinants | Details | Number | Percentage |
|-----------------------|--------------------|--------|------------|
| Age of stove | Below 5 years | | 20 |
| | 6-7 | | 24 |
| | Above 8 | | 56 |
| Location of the Stove | Inside the kitchen | | 64 |
| | Semi open space | | 36 |
| Frequency of Use | Once | | 20 |
| | Twice | | 24 |
| | Thrice | | 36 |
| | More than thrice | | 20 |
| Type of food cooked | Veg | | 20 |

| | | | |
|---------------------------------------|---------|--|----|
| | Non-veg | | 68 |
| | Both | | 12 |
| Number of dishes cooked for each meal | Below 2 | | 8 |
| | 3-4 | | 52 |
| | Above 5 | | 40 |

The age and location of the stove mattered a lot in the efficiency of fuel use (Ecotype, 2003) [3]. It was found that in fifty six percent of the households used a stove which was more than 8years old. Thirty six percent of them have stoves

kept in semi opened space outside the kitchen. Consumption of fuel also varied with the physical and cultural aspects of the family like-vegetarian meal and number of dishes prepared for each meal.

4. Strategies adopted to conserve fuel

Table 5: Fuel Conservation Strategies of Respondents

| Determinants | Details | Percentage of Respondents. | | |
|-------------------|--|----------------------------|-------|-----------|
| | | Always | Never | Sometimes |
| Cooking Practices | Reduce the flame once boiling starts | 60 | 20 | 20 |
| | Cooking rice in bulk | 48 | 28 | 24 |
| | Use of minimum amount of water for cooking. | 24 | 48 | 28 |
| | Cover the pan while cooking. | 48 | 28 | 24 |
| | Soak ingredients before cooking. | 48 | 24 | 28 |
| | Cook in excess and store for subsequent days. | 28 | 60 | 12 |
| Eating Habits | Eat food immediately after cooking to avoid reheating. | 32 | 28 | 40 |
| | Avoid overcooking of the food | 60 | 16 | 24 |
| Equipment Used | Clean the stove very often. | 48 | 28 | 24 |
| | Use of rice cooker, hay box, solar cooker for cooking. | 4 | 0 | 0 |
| | Using copper bottom vessels for cooking | 48 | 28 | 24 |
| | Use utensils that fit burner. | 44 | 32 | 24 |
| | Use ISI marked stove | 40 | 28 | 32 |
| | Use metal vessels than earthen ware. | 40 | 28 | 32 |
| Work Management | Use of induction cooker for slow and long time cooking. | 4 | 0 | 0 |
| | Cooking maximum food using stove at once rather cooking each time. | 28 | 48 | 24 |
| | Keep all materials needed for cooking near the stove. | 48 | 28 | 24 |
| | Allow frozen food to thaw before cooking | 48 | 24 | 28 |
| | Avoid doing other activities while the cooking is done | 60 | 16 | 24 |
| | Plan cooking schedule to avoid repetition | 28 | 40 | 32 |

According to Abuja *et al* (1987) [1] adopting simple behavioral changes and efficient cooking practices which do not require additional tools or devices, can save energy at little or no cost.

The fuel conservation strategies were different for each respondents. Cooking practices adopted to conserve fuel included reducing the flame once the boiling starts, cooking rice in bulk, using minimum amount of water for cooking, covering the pan while cooking and also soaking of selected the food items before cooking.

Eating habits of the respondents which helped to conserve fuel included avoiding overcooking of the food and reheating which was followed by sixty and thirty two percent of the respondents respectively.

Equipment used for cooking also lead to fuel wastage (Bhatt, 1994) [2]. Around forty percent of the respondents adopted strategies like cleaning the burner very often to prevent excess gas usage, using copper bottom vessels for cooking, preferred metal vessels rather than earthen ware and also used ISI marked stove. Four percent of the respondents always used induction cooker for slow and steady cooking.

Work habits of individuals also affect the fuel consumption pattern. Forty percent of the respondents always kept all the materials needed for cooking near the stove in order to avoid the wastage of fuel and delay in cooking. Forty eight percent of the respondents always allowed frozen foods to thaw before cooking. Sixty percent of the respondents always avoided doing other activities while cooking in order to concentrate on the cooking process and to avoid the wastage

of fuel. Forty percent of the respondent's never planned cooking schedule to avoid repetition.

Conclusion

The study concluded that both LPG and firewood were used as the cooking fuel by majority of the samples. Majority (84%) of the respondents were not aware of the consequences of fuel shortage and its after effects. An awareness class on fuel saving strategies was organized for the respondents. The developed informative CD contains all fuel conservation strategies and fuel saving tips that are useful for the households.

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