*Available online at* www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.4089

**ISSN: 2320 – 7051**

*Int. J. Pure App. Biosci.* **5 (3):** 996-1000 (2017)

*Research Article*

International Journal of Pure & Applied Bioscience

OPEN ACCESS

# Fuel Consumption Pattern in Rural Areas of Dharwad District

**Ramya Badigannavar and Suma Hasalkar***

Department of Family Resource Management, College of Rural Home Science

University of Agricultural Sciences, Dharwad -580005 India

*Corresponding Author E-mail: ramyabadigannavar@ymail.com

Received: 17.06.2017 | Revised: 28.06.2017 | Accepted: 29.06.2017

**ABSTRACT**

*In the Indian villages the domestic energy needs are met from non commercial sources as fire wood, dung cake and other agricultural wastes. About 2.4 billion people rely on biomass, mainly for cooking and heating. An half of the world's population mostly in rural areas of Asia, sub-Saharan Africa and Latin, America still rely on unprocessed biomass as their primary source of domestic energy. In general rural domestic sector in India uses 1.2-2Kg of biomass/capita/day. Poverty is the major cause of biomass fuel use. No wonder there are only a handful of Liquid Petroleum Gas (LPG) users and also use biomass (mixed users) to reduce fuel cost. Hence the study was conducted to know the socio economic status, kitchen type, size and ventilation in the kitchen and to study fuel consumption pattern, reason for the choice of fuel wood for cooking. The study was carried out in villages of Dharwad district during the year 2016. The majority of the respondents belong to lower middle socio economic status. Type of kitchen was indoor kitchen with partition and kitchen was a very small and have no window facility. Most of the respondents rely on biomass for cooking fire wood and agricultural waste were used predominantly with 5-10Kg of fuel per day for cooking. They preferred fuel wood because of its easy source in the farms and readily available in their place. Knowledge should be imparted among rural respondents to switch for a cleaner fuel and utilize the government service.*

***Key words:*** *Biomass, socio economic status, chimney, biomass Chula, window, Liquid Petroleum Gas (LPG).*

## INTRODUCTION

Despite of rapid urbanization, villagers still dependent predominantly on traditional biomass for cooking. Biomass fuel refers to plant or animal material used as source of energy they includes wood, charcoal, dung, crop residues such as hay, jute stick, paddy husk, dried leaves, bamboo etc Approximately half the world's population and up to 90 percent of rural households in developing countries rely on unprocessed biomass fuel and around 2.4 billion people rely upon biomass for cooking, heating and lighting 0.6 billion people use coal. The annual consumption of wood is 302.1 million tons, dung cake 120.6 million tons and crop residues 115 million tons. In general rural domestic sector in India uses 12-12.1 Kg of biomass/capita/day.

**Cite this article:** Badigannavar, R. and Hasalkar, S., Fuel Consumption Pattern in Rural Areas of Dharwad District, *Int. J. Pure App. Biosci.* **5(3):** 996-1000 (2017). doi: http://dx.doi.org/10.18782/2320-7051.4089

**Copyright © June, 2017; IJPAB**

The type of fuel used by a household is determined mainly by its economic status. In energy ladder, biomass fuels namely animal dung crop residues and wood which are the dirtiest fuels lie at the bottom and are used mostly by poor people. The lower income women are more vulnerable because they were using biomass fuels/chulhas, cooking in a multipurpose room, spending long hours in kitchen, they were more exposed to smoke, heat, pollutants and the conditions were exacerbated because they were living in sub standard housing in one room

Leading to congestion or crowding and with no ventilation. The biomass using kitchens are oftenly poorly ventilated and half of the poor, rural families do not have separate kitchen. Hence the study was conducted to know the fuel consumption pattern among rural respondents.

**Objectives of the study**

1) To study the socio economic status of the respondent.
2) To know kitchen type, kitchen size and ventilation in the kitchen.
3) To study fuel consumption pattern, reason for the choice of fuel wood for cooking by the respondents.

## MATERIALS AND METHODS

The survey was conducted in three selected villages of Dharwad district namely Kalagatagi taluk, Dharwad taluk and Hubballi taluk from these taluk's, 3 villages were taken for the study namely Hirehonnalii, Marewad, Gokul total sample comprises of 90. The researcher visited the selected villages during the leisure hours and recorded the detailed information of the selected houses by using a questionnaire. The general information was elicited from respondents.

## RESULT AND DISCUSSION

The findings of the present study are discussed below:

From Table 1, presents about socio economic status of the family. It clearly indicate that 50 percent of them belong to lower Middle class family, 43.3 percent are poor class and vary less respondents belong to Upper Middle class(6.70%). These results are inline with the results of Komala *et al.*[5] and Hassan.*et al*[4].

Table 2, presents information on type of kitchen, chimney and window of the selected rural households. Majority of the respondents cook in indoor kitchen with Partition (94.5%) and only 5.5 percent of the respondents cooked indoor kitchen without partition. These results were supported by Balakrishna *et al.*[1] and also the results with Bhattacharya *et al*[2].

The details of size of kitchen, chimney and window of the selected rural households. Majority of the respondents have very small kitchen(34.44%) followed by very large kitchen (23.33%), medium sized kitchen (20.02%), small sized kitchen (14.44%) and only few have very large sized kitchen( 7.77%).

Availability of window in the kitchen was majority of them do not possess window in the kitchen (57.77%) and only 42.22 percent of the respondents has window in the kitchen. Majority of them (50.00%) have one window in the kitchen followed by two windows (5.60%) and only few possess 3 windows in the kitchen (2.20%). As per the observation and study there was no proper ventilation. The window was present in the kitchen for name sake it was not used properly and it was closed because of mosquitoes and insects. Majority of them possess chimney in the kitchen (71.00%) and only few do not have chimney facility in the kitchen (19.00%).

Table 3 shows that Majority of them were using Chula that is cent percent, gas stove (31.10%), Kerosene stove (20%), electric stove (2.2%) and biogas stove (1.1%). These results are in accordance with the results of Bhattacharya *et al*[2].

Table 4 describes type of fuel used and quantity of fuel used per day for cooking by the respondents. With respect to fuel use pattern of the respondents, maximum percentage of the respondents used firewood (95.50%) followed by agriculture waste (crop residues, scavenged twigs, grass, coconut shell) (75.50%), dung cake (62.20%), kerosene

(61.10%), Liquid Petroleum Gas (LPG) (21.10%), electric appliances (6.60%), charcoal (2.2%). the results are in accordance with Gemert *et al*[3].

It reveals that the maximum percentage of the respondents use 5-10Kg of fuel per day(36.60%) followed by more than 10Kg per day (32.30%) and 31.10 percent of the respondents use 1-5Kg of fuel per day. Most of the respondents depend on the fuel wood as it is easily available and the kerosene was provided by the government every month per family (3liters/month). Fuel use pattern has not changed since ages because of lack of awareness about the cleaner fuel usage.

Table 5 depicts that 72.20 percent said that reason for choice of fuel wood was because of its easy source followed by 68.8 percent said that it was readily available, 25.55 percent said that it is cheap and 1.1 percent said other means (tasty food). The respondents preferred fuel wood only because of its easy availability and taste of the food was enhanced by the use of fuel wood as compared with cleaner energy fuels.

**Table 1: Socio economic status of the selected families in the study area N=90**

| Socio economic status | Score | Frequency | Percentage |
|---|---|---|---|
| Upper high | >76 | 00 | 0.00 |
| High | 61-75 | 00 | 0.00 |
| Upper Middle | 46-60 | 06 | 6.60 |
| Lower Middle | 31-45 | 45 | 50.00 |
| Poor | 16-30 | 39 | 43.30 |
| Very poor / below poverty line | <15 | 00 | 0.00 |

**Table 2: Details of kitchen, chimney and window in the selected rural households N=90**

| **Particulars** | Frequency | Percentage |
|---|---|---|
| **Type of kitchen** | | |
| Indoor kitchen without partition | 05 | 5.50 |
| Indoor kitchen with Partition | 85 | 94.50 |
| **Kitchen size** ( Sq. Feet) | | |
| >130 Very large | 21 | 23.33 |
| 110-130 Large | 07 | 7.77 |
| 90-110 Medium | 18 | 20.02 |
| 70-90 Small | 13 | 14.44 |
| <70Very small | 31 | 34.44 |
| **Details of chimney & windows** | | |
| Availability of window | **Yes** 38 (42.22) | **No** 52 (57.77) |
| Availability of chimney | 71(78.89) | 19(21.11) |
| Number of windows | One window | 45 (50.00) |
| | Two window | 5 (5.60) |
| | Three window | 2 (2.20) |

Note : Multiple response are possible Figures in the parenthesis indicate percentage

**Table 3: Type of cooking stove used by the respondents**

| **Type of cooking stove** | | |
|---|---|---|
| Biomass Chula | 90 | 100.0 |
| Gas stove | 28 | 31.10 |
| Kerosene stove | 18 | 20.00 |
| Biogas stove | 01 | 1.10 |
| Electric stove | 02 | 2.20 |

**Table 4: Type of fuel used and quantity of fuel used per day for cooking by the respondents N=90**

| **Type of fuel used** | **Frequency** | **Percentage** |
|---|---|---|
| Fire wood | 86 | 95.50 |
| Dung cake | 56 | 62.20 |
| Other (Electric appliance) | 06 | 6.60 |
| Agriculture waste (crop residues, scavenged twigs, grass coconut shell) | 68 | 75.50 |
| Kerosene | 55 | 61.10 |
| LPG | 19 | 21.10 |
| Charcoal | 02 | 2.20 |
| **Quantity Fuel use per day** | | |
| 1-5 kg | 28 | 31.1 |
| 5-10kg | 33 | 36.6 |
| >10 | 29 | 32.3 |

**Table 5: Reason for the choice of fuel wood for cooking by the respondents N=90**

| **Reason for choice of fuel wood** | | |
|---|---|---|
| Easy source | 65 | 72.20 |
| Readily available | 62 | 68.80 |
| Cheap | 23 | 25.55 |
| Any other (tasty food) | 01 | 1.10 |

## CONCLUSION

The concept of the hour is energy silver line amidst the dark clouds hovering the nation. The future should never bleak to the generation. It is the effort on the part of programme planners, economists, marketing authorities and researcher that could long way in improving the situations by providing an education, awareness to change the fuel consumption pattern, improved ventilation system in kitchen and use of improved chulas for cooking can bring a desirable change in the living condition of the rural household and also provide a good exposure about government facilities available to the rural community to improve there standard of living.

## Acknowledgment

I would like to gratefully and sincerely thank Dr. Suma Hasalkar for her guidance, understanding, patience, and most importantly, her friendship during my studies at college of Rural Home Science, University of Agricultural Sciences Dharwad. I would like to thank the Department Family Resource Management, Department of Statistics especially those members of my Master Degree committee members for their input, valuable discussions and accessibility. Finally, and most importantly, I would like to thank my Family members my parents as well as my Friends who endured and survived the experience of masters and provided me with unending encouragement and support

## REFERENCES

1. Balakrishnan, K., Sankar, S., Arnola, J., Mehta, S., Smith, K. R., Rao, C., Kumar, S., Akbar, S. and Lvovsky, K., Respirsble particulate levels in rural hoseholds of Andrapradesh, India-Daily concentrations and time activity data. *Proceedings*: Indoor air. (2004).
2. Bhattacharya, M., Chandra, A., Joon, V. Household energy consumption pattern and socio cultural dimensions associate with it: A case study of rural Haryana, India biomass and bio energy, **33:** 1509-1512. (2009).
3. Gemert, V. F., Chavannes, N., Nabadda, N., Luzige, S., Kireng, B., Eggermont, C.,

Jong, D., Molen, V, T. Impact of chronic respiratory symptoms in a rural area of sub-saharan Africa; an indepth qualitative study in the Masindi district of Uganda. *Primary Care Respirat. J.*, **22(3):** 300-305. (2013)

4. Hassan Halder Pelkonen and Pappinen, Rural households preferences and attitudes towards biomass fuels result from comprehensive field survey in Bangladesh energy. *Sustain. Soc.*, **3 (24):** (2013)
5. Komala, H. P., Devi, P. A., Biomass: A key source of energy in rural households of chamarajanagar district. *Adv. Appl. Sci. Res.*, **7 (1):** 85-89. (2016).