

Constraints in the adoption of time and energy saving household appliances in rural area

FARIDA AHMED

Guest Faculty

Department of Home Science, Faculty of Science
University of Allahabad, Allahabad (U.P.) India

ABSTRACT

Efficient use of equipment includes the correct selection, arrangement, operation and care of appliances so that the homemaker may accomplish the maximum amount of work with the minimum of effort in the shortest possible time (Varghese *et al.*, 2017). Low economic status, age old practices, availability of resources and culture are the factors affecting the adoption of technology innovations. Keeping this in view a study was conducted in the two villages namely Achitpur and Chota Mirzapur Khurd of Jamalpur Block of Mirzapur District to find out the constraints in the adoption of various household time and energy saving kitchen appliances and to find out the association/relationship of personal and socio-economic characteristics of respondents with different constraints faced by them in the adoption of time and energy saving household appliances. Total one hundred and twenty five (125) female respondents from the two villages were selected randomly. Data were collected by using interview schedule and observations. Quantitative analysis was undertaken using the SPSS computer package. It was found that adoption of time and energy saving kitchen appliances was affected by socio-economic factors such as age, caste, literacy status, literacy, family income and family type. It is suggested that government should motivate household appliances manufacturers for its free distribution and training in rural area.

Key Words : Socio-economic, rural women, pressure cooker, kerosene stove

INTRODUCTION

Every day we perform many activities in our households. Some of the activities like eating, cooking, exercising, sleeping, bathing and entertaining are also carried out by us along with our work related activities but all these are to be completed within the available time that is 24 hours. We work and feel exhausted, if we do not rebuild our energy from time to time. This means that like time we also need something else to perform these activities. This is called energy. It is the capacity to do the work. It means that just as available time as a resource is limited, we also have limited amount of energy. So we can say that within limited

time we must finish all our work with our limited energy. This can be possible by the use of time and energy saving household equipments or appliance.

Efficient use of equipment includes the correct selection, arrangement, operation and care of appliances so that the homemaker may accomplish the maximum amount of work with the minimum of effort in the shortest possible time (Varghese *et al.*, 2017). Using household appliances correctly or efficiently saves time and energy of a home maker.

Objectives:

1. To assess the socio- economic characteristics of the respondents.
2. To find out the constraints in the adoption of time and energy saving household appliances.

METHODOLOGY

For the study total 125 rural (16 % of the total household) selected randomly from the two villages Achitpur and Chota Mirzapur Khurd of Jamalpur Block of Mirzapur District of Uttar Pradesh. Seven days repeated demonstrations and training were given on the use of pressure cooker and kerosene stove to the female respondents to make them aware of these appliances. In the gap of one week repeated demonstrations and trainings (five times) were given to the one twenty five respondents at the selected study area. After the intervention various constraints in the adoption of household time and energy appliances examined. Various statistical tests such as chi-square test, t-test, F-test, one-way ANOVA and multivariate analysis were utilized to test for association between socio-economic and demographic and other important variables with the various level of confidence set as $p < 0.05$, 0.01 and 0.001 for all type of analysis.

RESULTS AND DISCUSSION

It is evident from Table 1 that 45.6 per cent of the respondents were of younger age group where as 28.8 per cent and 25.6 per cent were of middle age and above middle age group, respectively. It has been observed that economic activities were being taken by majority of young age (31.2 %) rural women. The average age and standard deviation of the respondents was 38.90 years and 11.97 year, respectively.

Maximum respondents (55.0 %) were belonged to OBC (other backward caste) category followed by 37.0 per cent respondents were of SC/ST (schedule caste and schedule tribe) and remaining 8.0 per cent respondents were of the caste of other category. It can be interred from the above findings that in our social system OBC have been dominating.

The majorities of respondents (66.4 %) were illiterate. The respondents who educated upto primary, middle, high school and intermediate were 16.0 per cent, 11.2 per cent, 2.4 per cent and 1.6 per cent, respectively. Higher educated respondents as graduate and post graduate were 1.6 per cent and 0.8 per cent, respectively.

The majority of the respondents (66.4 %) were illiterate only 33.6 per cent respondents were literate which is combined together for comparison purposes. It may be concluded that the female literacy rate in the study area is very low. Similar comments also reported by

Prasad *et al.* (2009).

More than half (52.8 %) of respondents had family annual income below Rs. 20,000 followed by 31.2 per cent in family annual income of Rs. 20,000 to 40,000 and rest 16.0 per cent respondents had more than Rs. 40,000 as family annual income. The average family annual income and standard deviation of the respondent's household was Rs. 28,604.00 and Rs. 24,414.10, respectively. The trend shows that in study area, economic status of the people was very poor. Parikh and Laxmi (2000) have also stated poor economic condition of rural people in their study done at Tamil Naidu. Basic reason of poverty in the present study area was found large population growth.

Majority of respondents (64.3 %) belonged to nuclear family and rest 35.2 per cent respondents were from joint family, respectively. It shows that the family structure trends moving from joint to nuclear family in rural areas too.

The female subjects who reported high price of the appliances as well as costly maintenance, maximum (75.0 % and 50.0 %) were from other type of caste and minimum 44.4 per cent SC/ST in case of pressure cooker and 33.3 per cent OBC about kerosene stove, respectively (Table 2). In other type of constraints the percentage of SC/ST respondents were more in comparison to the OBC and Others in adoption of pressure cooker while in adoption of kerosene stove more SC/ST except the constraints 'need occasionally replacements' and the 'spare parts are not always available in rural market', respectively. It may be concluded the fact that the SC/ST or OBC females were faced difficulties regarding

Table 1 : Distribution of the respondents according to their socio-economic characteristics of the respondents		
Socio-economic characteristics	Frequency	Percentage (%)
Age group (Years)		
≤35	57	45.6
36-45	36	28.8
> 45	32	25.6
Average age ± SD =38.90 ±11.97		
Caste		
SC/ST	46	37.0
OBC	69	55.0
Others	10	8.0
Literacy		
Illiterate	83	66.4
Literate	42	33.6
Total family annual income (Rs.)		
≤ 20,000	66	52.8
20,000-40,000	39	31.2
> 40,000	20	16.0
Average family annual income ± SD = 28,604.00 ± 24,414.10 (Rs. 9,600 to 1,10,000)		
Family type		
Nuclear	81	64.8
Joint	44	35.2

lack of knowledge about operation and maintenance, high cost price and high maintenance cost and non availability in rural market with danger of accidents in adoption of pressure cooker and kerosene stoves. It may be due to financial crises as well as poor literacy status and far away market from rural community.

The various constraints reported by the respondents in the adoption of time and energy saving household appliances like as pressure cooker and kerosene stove according to their literacy status is given in Table 3. It shows that maximum (46.3 % and 36.5 %) of respondents were not purchasing due to high cost of appliances pressure cooker and kerosene stove followed by 22.2 per cent and 22.1 per cent due to costly maintenance of the same appliances, respectively. Other constraints such as need occasional replacement, danger of accidents and spare parts are not always available in rural market were seen in 7.4 per cent, 3.7 per cent and 11.1 per cent in adoption of pressure cooker where as 8.7 per cent, 12.5 per cent and 20.2 per cent in adoption of kerosene stove, respectively. 2.8 per cent and 6.5 per cent of respondents had no knowledge about operation and maintenance of pressure cooker and due to fear of clogging of safety valve in it, respectively.

The various type of constraints reported by the respondents in adoption of pressure cooker, the percentage of illiterate respondents were found to more in comparison to the

Table 2 : Relationship of respondents between their caste and different constraints faced by them in the adoption of time and energy saving household appliances (N=125)

Constraints	Time and energy saving household appliances					
	Pressure cooker			Kerosene stove		
	Caste					
	SC/ST (N=45)	OBC (N=59)	Others (N=4)	SC/ST (N=6)	OBC (N=54)	Others (N=44)
Frequency of responders	Frequency of respondents	Frequency of respondents	Frequency of respondents	Frequency of respondents	Frequency of respondents	
Lack of knowledge about operation/ maintenance	1 (2.2)	2 (3.4)	-	-	-	-
High cost of appliances	20 (44.4)	27 (45.8)	3 (75.0)	17 (38.6)	18 (33.3)	3 (50.0)
Clogging in safety valve/due to rust	4 (8.9)	3 (5.1)	-	-	-	-
Need occasional replacement	4 (8.9)	4 (6.8)	-	4 (9.1)	4 (7.4)	1 (16.7)
Danger of accidents	1 (2.2)	3 (5.1)	-	7 (15.9)	6 (11.1)	-
Maintenance is costly	10 (22.2)	13 (22.0)	1 (2.50)	12 (27.3)	11 (20.4)	-
Spare parts are not always available in rural market	5 (11.1)	7 (11.9)	-	4 (9.1)	15 (27.8)	2 (33.3)

Figure in parenthesis indicate percentage

literate respondents with the exception of constraints ‘maintenance is costly’ and ‘clogging in safety valve’ where as in the adoption of kerosene stove, the various constraints were more in literate respondents than those respondents who were illiterate except the constraints ‘danger of accidents and high maintenance cost’, respectively.

The constraints ‘high cost’ of pressure cooker reported by maximum (54.3 %) of those respondents who were from middle income group followed by upper income group (42.9 %) while in case of kerosene stove, it was maximum (66.7 %) in upper income group respondents followed by middle income group (40.0 %). The other constraints like as ‘clogging of safety valve’, ‘need occasional replacement’, ‘danger of accident’ and ‘spare parts are not always available in rural market’ were told by 6.1 per cent, 9.1 percent, 3.0 per cent and 10.6 per cent lower economic group respondents while 8.6 per cent, 5.7 per cent is and 14.10 per cent by middle income group respondents and no respondents of higher income group stated such type of constraints.

In case of kerosene stove, the non-availability of spare parts in rural market was reported by maximum (33.3 %) of the respondents of higher income group and minimum 17.1 per cent by middle income group, respectively. The other constraints were not reported by upper economic group respondents while the subjects of lower and middle economic group who were facing difficulties in same proportion in the adoption of kerosene stove, respectively. It indicates that lower and middle economic group subjects were not in position to adopt

Table 3 : Relationship of respondents between their literacy and different constraints faced by them in the adoption of time and energy saving household appliances (N=125)

Constraints	Time and energy saving household appliances					
	Pressure cooker			Kerosene stove		
	Literacy					
	Illiterate (N=82)	Literate (N=26)	Total (N=108)	Illiterate (N=78)	Literate (N=26)	Total (N=104)
Frequency of responders	Frequency of respondents		Frequency of respondents	Frequency of respondents		
Lack of knowledge about operation/ maintenance	3 (3.7)	-	3 (2.8)	-	-	-
High cost of appliances	39 (47.6)	11 (42.3)	50 (46.3)	28 (35.9)	10 (38.5)	38 (36.5)
Clogging in safety valve/ due to rust	3 (3.7)	4 (15.4)	7 (6.5)	-	-	-
Need occasional replacement	8 (9.8)	-	8 (7.4)	6 (7.7)	3 (11.5)	9 (8.7)
Danger of accidents	4 (4.9)	-	4 (3.7)	13 (16.7)	-	13 (12.5)
Maintenance is costly	15 (18.3)	9 (34.6)	24 (22.2)	18 (23.1)	5 (19.2)	23 (22.1)
Spare parts are not always available in rural market	10 (12.2)	2 (7.7)	12 (11.1)	13 (16.7)	8 (30.8)	21 (20.2)

$\chi^2=6.75, df=4, P>0.05$

Figure in parenthesis indicate percentage

pressure cooker and kerosene stoves may be due to lack of awareness about the importance of these appliances.

Use of pressure cooker saves 60 per cent fuel. However, its use by rural housewives was limited *i.e.* pressure cooker is used only by 13.6 per cent of rural families (Table 4). This is because of the high cost constraints as well as because of the lack of knowledge and training of its proper use. Similar findings also reported by Oberoi (1996).

Table 4 : Relationship of the respondents between their family annual income (Rs.) and different constraints faced by them in the adoption of time and energy saving household appliances (N=125)

Constraints	Time and energy saving household appliances					
	Pressure cooker			Kerosene stove		
	Family annual Income (Rs.)					
	≤ 20,000 (N=66)	20,000- 40,000 (N=35)	>40,000 (N=7)	? 20,000 (N=63)	20,000- 40,000 (N=35)	>40,000 (N=6)
Frequency of respondents	Frequency of respondent	Frequency of respondents	Frequency of respondents	Frequency of respondents	Frequency of respondent	
Lack of knowledge about operation/maintenance	3 (4.5)	-	-	-	-	-
High cost of appliances	28 (42.4)	19 (54.3)	3 (42.9)	20 (31.7)	14 (40.0)	4 (66.7)
Clogging in safety valve/duo to rust	4 (6.1)	3(8.6)	-	-	-	-
Need occasional replacement	6 (9.1)	2 (5.7)	-	5 (7.9)	4 (11.4)	-
Danger of accidents	2 (3.0)	2 (5.7)	-	9 (14.3)	4 (11.4)	-
Maintenance is costly	16 (24.2)	4 (11.4)	4 (57.1)	16 (25.4)	7 (20.0)	-
Spare parts are not always available in rural market	7 (10.6)	5 (14.3)	-	13 (20.6)	6 (17.1)	2 (33.3)

Figure in parenthesis indicate percentage

The various types of constraints such as ‘clogging in safety valve’ ‘danger of accidents’, ‘maintenance is costly’ and ‘spare parts are not always available in rural market’ were stated by maximum number of respondents who were from nuclear family while ‘lack of knowledge about operation/maintenance’ ‘high cost’ and ‘need occasional replacements’ were projected in maximum percentage who were from joint family, respectively. Statistically, these differences between the respondents of nuclear and joint family in connection to various constraints are not found to be significant ($\chi^2=1.85$, $df=6$, $P>0.05$). In the adoption of kerosene stove, the subjects of joint family were reported all the specified constraints in more percentages than the subjects of nuclear family with the exception of the constraints ‘danger of accidents’ and ‘costly maintenance’, respectively. The differences in the proportion of various types of constraints between the respondents of nuclear and joint family are not found to be statistically significant ($\chi^2=6.74$, $df=4$, $P>0.05$). It indicates in Table 5 that the respondents of nuclear family were more fearful from accidents, maintenances well as

Table 5: Relationship of respondents between their family type and different constraints faced by them in the adoption of time and energy saving household appliances

Constraints	Time and energy saving household appliances			
	Pressure cooker		Kerosene stove	
	Family type			
	Nuclear	Joint	Nuclear	Joint
	Frequency of respondents (N=73)	Frequency of respondents (N=35)	Frequency of respondents (N=71)	Frequency of respondents (N=33)
Lack of knowledge about operation/ maintenance	2 (2.7)	1 (2.9)	-	-
High cost of appliances	32 (43.8)	18 (51.2)	22 (31.0)	16 (48.5)
Clogging in safety valve/due to rust	6 (8.2)	1 (2.9)	-	-
Need occasional replacement	5 (6.8)	3 (8.6)	5 (7.0)	4 (12.1)
Danger of accidents	3 (4.1)	1 (2.9)	10 (14.1)	3 (9.1)
Maintenance is costly	16 (41.9)	8 (22.9)	20 (28.2)	3 (9.1)
Spare parts are not always available in rural market	9 (12.3)	3 (8.6)	14 (19.7)	7 (21.2)
	$\chi^2=1.85, df=6, P>0.05$		$\chi^2=6.74, df=4, P>0.05$	

Figure in parenthesis indicate percentage

availability of the spare parts of both the appliances pressure cooker and kerosene stove than the respondents of joint family, respectively.

Conclusion:

Seven days repeated demonstrations and trainings were given on the use of pressure cooker and kerosene stove. The pressure cooker is used only by very few rural women. So pressure cooking was not found very common because very few families possessed pressure cooker. At the time of training rural women reported that pressure cooking saves their fuel consumption and kerosene stove reduce the risk of respiratory ailments. When pressure cooker and kerosene stove were taken back, the attitudes of the female respondents who used these appliances were studied. Many have answered; they could not purchase it because of money constraints. Economical constraints seriously faced by the respondents followed by educational constraints and infrastructural constraints. The limited outlets of time and energy saving household appliances in the rural area, high cost of devices and lack of maintenance facilities were the constraints that affected adoption of time and energy saving household appliances. It is suggested that government should motivate household appliances manufacturers for its free distribution and training in rural area.

REFERENCES

Oberoi, K., Sandhu, P. and Bakshi, R. (1996). Rural Energy Management. *Indian J.oExten. Edu.*, **32** (1-4): 114.

FARIDA AHMED

Parikh, J and Laxmi, V. (2000). Biofuels Pollution and Health Linkages A Survey of Rural Tamil Naidu. *Economic & Political Weekly*, **35** (47) : 4125-4137.

Prasad *et al.* (2009). Assessment of knowledge and Attitude of Respondents Towards Programme of Krishi Vigyan Kendras”, 5th National Seminar on Extension Perspective in Changing Agricultural Environment, held at CSAU & T, Kanpur on March 5-7.

Varghese, M.A., Ogale, N.N. and Srinivasan, K. (2017). Home Management, New Age International Publisher, Page-151.
