

## Diffusion and Acceptance of Home Science Technologies by Rural Women - An Explorative Research Study in Dharwad District of Karnataka State.

DR. LAKSHMI M. PALOTI

Assistant Professor of Home science,  
Government First Grade College for Women, Bailhongal, Karnataka, India  
Email – lakshmipaloti1979@gmail.com

**Abstract:** India is known as the land of villages and most of its population still lives in rural areas. According to Roy (2006), women in rural areas suffer from many grave disadvantages and are subjected to a great deal of hardship and drudgery. The jobs done by them are often physically arduous, time consuming and repetitive, resulting in fatigue and drudgery. Rural women face many responsibilities with little or undervalued knowledge and poor outdated tools and equipment's. Women need new home science technologies and practices to improve upon the old ones. Mohanty (2008) also says that, for leading a better health and higher productivity women need to adopt home science technologies which are compatible with their local, cultural and economic conditions. In this context, diffusion and acceptance of homestead technologies plays pivotal role in the betterment of rural women. The study was conducted during 2016-17 by experimental design in two purposively selected villages of Dharwad taluk of Dharwad district of Karnataka State. The total sample size was 80 rural who have adopted the diffused home science technologies. The transfer of technology is a very complex process. For a technology to be transferred it needs to be diffused in the social system. Diffusion is a special type of communication in which messages are about a new idea. Acceptance is a mental decision to make full use of an innovation at the best course of action available. Always diffusion and acceptance of any technologies always go simultaneously with each other. With respect to diffusion of home science technologies the maximum diffusion was observed for health and safety practices for women (31.65 %). Whereas the technology care and storage practice of clothing was diffused to the extent of 19.27 per cent. In case of balanced diet, stain removal techniques and weaning foods the diffusion was 14.68, 11.47 and 10.69 per cent respectively. None of the respondent accepted boiling water and dust mite control.

**Key Words:** diffusion, acceptance, innovation, home science, innovation.

### 1. INTRODUCTION:

Home science is a science that coordinates the scientific and practical knowledge drawn from different fields and utilizes it in a suitable way for the development, welfare and happiness of individual, family, community and nation at large (Verma, 2000). The science of home comprises of Food Science and Nutrition, Family Resource Management, Textile and Clothing, Human Development and Home Science Extension. These areas of home science are all inter connected to one another providing a holistic approach in order to better the life of individuals, families and communities. Home science extension by virtue of its linkage mechanism with rural population, plays a pivotal role in transferring new home science technologies. According to Verma and Kaushik (2006) the home science technologies are a complex blend of scientific information, materials, technical methods and processes that require the art of systematically using them for improving skill and task performance. However, the development of new home science technologies does not end by itself. Dissemination of the technologies by competent persons is equally important. The technologies need to be reached the end users. Home science extension is an important branch of home science where one decides on the methodology of transferring technologies depending on the clientele. The ultimate step being the adoption of technology and continuous to use the same. The transfer of technology is a very complex process. For a technology to be transferred it needs to be diffused in the social system.

Today's life is not as simple as it was earlier. Environmental changes and technological advancements have accelerated the living conditions both at home and outside the home. Women are no longer confined to the four walls of their houses. They are joining the men in working outside their house shouldering the reproductive and nurturing roles. Balancing both domestic and professional tasks has increasingly becoming a challenge for women folk. She has to find ways to face these challenges by efficiently combining technological advancement with traditional practices.

According to Rogers (1983), diffusion is a special type of communication in which an innovation is communicated through certain channels over a period of time among the members of the social system. The newness aspect of the message indicates the innovation. Adoption is a decision to make full use an innovation at the best course

of action available. Diffusion and adoption process of home science technologies go on simultaneously. Whereas, adoption signifies it is putting the technology in to use in order to know its utility. The phenomenon of diffusion and adoption is always associated with innovations. Rogers and Shoemaker (1971) termed adoption process as an Innovation Decision process. The five stage of Innovation-Decision process are knowledge, persuasion, decision, implementation and confirmation. The decision stage in the Innovation-decision-process takes place when an individual engages in activities that lead to a choice to accept or reject an innovation. Acceptance is a mental decision to make full use of an innovation at the best course of action available whereas rejection is mental decision not to adopt an innovation. However; researches on these aspects of home science technologies are few and scanty. Keeping Rogers work as basis, the present research has been planned to throw a light on acceptance of home science technologies by the rural women with the following objectives:

- To study the diffusion process of home science technologies.
- To understand the process of acceptance of diffused home science technologies by the rural women.

## 2. REVIEW OF LITERATURE:

### 2.1. Diffusion of technologies in the social system:

Manjula (2003) analysed the behaviour of Krishi Prashasthi awardees and their influence on the neighboring farmers. The study revealed that every year, a little less than half of the awardee farmers (44.45 %) advised more than 30 of their neighbors while one third of them (33.30 %) advised 21-30 and about one fifth (22.22 %) advised 10-20 of their neighboring farmers regarding the improved cultivation practices of ragi.

Hinge (2009) studied the diffusion and adoption of wine grape production technology in Maharashtra. He reported that in the year of introduction of wine grape in Lasalgaon village *i.e.*, in the year 2000 only one farmer had grown wine grape. This number rose to 2 in 2001 and 7 in the year 2002. The maximum number of adopters *i.e.*, 13 farmers were observed in each of the year 2004 and 2005 respectively. Then onwards in the year 2006, 2007 and 2008 the number of adopters decreased to 12, 11 and 10 adopters respectively. In the year 2008, the cumulative number of farmers adopting wine grape was 81.

Balasubramaniam (2012) conducted a study on utilization of market information disseminated through Dynamic Market Information (DMI) in Tamil Nadu. The total sample size was 120 registered DMI farmers. The study showed that majority (60.00 %) of the respondents disseminated the messages received from DMI to their fellow farmers and friends who were not registered for DMI and about 40 per cent of respondents didn't disseminate the messages to other farmers due to unwillingness to share with others.

Rathore and Massey (2013) studied the perception of farmers about Panthnagar farmers fair (Kissan Mela) on a sample size of 40 farmers. The study found that the respondents got the information about Panthnagar Kissan Mela from their neighbours (55.00 %), social workers (22.50 %), announcements (20.00 %) and newspapers (2.50 %).

### ACCEPTANCE OF TECHNOLOGIES

Parab et al. (2010) conducted a research study on listening behaviour of agricultural community radio listeners and adoption of improved technologies by them in Pune district of Maharashtra. The total sample size was 40 listeners of community radio. The findings of the study noted that majority (62.50 %) of respondents adopted pesticide application technology followed by fertilizer application technology (57.50 %), method of planting (50.00 %) and nutritional management of livestock (42.50 %).

Khambra *et al.* (2011) conducted a study on adoption feasibility of clothing related technologies in Hisar district of Haryana state. The total sample size was 30 rural women. The study showed that the adoption feasibility index was highest for stitching (88.60 %) followed by worth out of waste (88.80 %), hand knitting (85.60 %), tie and dye (77.60 %), embroidery (72.40 %) and crochet (48.70 %).

Uplap *et al.* (2012) conducted study on knowledge and adoption of food grain storage practices by the farm women in Pune. The total sample size was 170 farm women. Results of the study indicated that 95.82 per cent of the respondents adopted the method of sun drying, 94.11 per cent of them adopted the method of sieving of food grains and 50.42 per cent adopted the method of separation of broken grains.

Patil (2016) carried out a study on adoption of selected home science technologies in Northern Karnataka on a sample size of 120 women. The findings of the study revealed that majority (45.83 %) of the rural women had medium level of adoption score on developmental mile stones and stimulating play materials followed by food and food pyramid (45.00 %), consumer education (43.33 %) and stain removal technology (45.00 %).

## 3. METHODOLOGY:

### 3.1. Locale of the study:

The study was conducted in two purposively selected villages of Dharwad taluk of Dharwad district of Northern Karnataka during 2016-17. The criteria for selection of the villages were that they are in two different directions from Dharwad city. They have a small population of about hundred households and small villages with a

smaller number of households are feasible for individual and repeated contacts. After the diffusion of home science technologies 80 rural women who accepted the home science technologies among the two villages were considered as sample size for the present study.

**3.2. Research design and statistical tools used:**

The experimental design was selected as an appropriate research design. With the help of structured interview schedule the responses of the rural women was gathered which constituted the data for the present research study.

**3.3. Pre-test:** To determine the level of knowledge of respondents about selected home science technologies pre-test was conducted with the help of structured interview schedule developed for the study.

**3.4. Dissemination of selected technologies:**

Technologies were disseminated by subject experts of home science. The intervention programme for dissemination was included lectures, demonstrations and exhibitions on the selected home science technologies.

**3.5. Duration for acceptance:**

To study the diffusion and adoption process three months duration was given to the respondents. Further implementation and confirmation of the technologies were studied by allowing a gap of four weeks after the adoption stage.

**3.6. Follow-up visits:**

During the three months of acceptance every household was visited regularly on a weekly basis to clarify the difficulties in understanding and reinforcement of the dissemination knowledge.

**3.7. Selection of technologies:**

Eight home science technologies from four departments of home science were selected for diffusing in the village. Technology Topics covered in Food science and nutrition were, Balanced diet and Weaning foods. Stain removal techniques and Care and Storage practices of clothing were from textile and apparel designing department, Boiling water and water softening methods and Dust mite control technology from family resource management, Toys for stimulating cognitive development and Health and safety practices for women were selected from human development department.

**3.8. Diffusion process of selected home science technologies:**

Diffusion was operationalized as the process by which the home science technologies spread over time among the communities of selected villages through lecture-cum demonstration and exhibition in the selected villages. The diffusion process of each home science technology was studied by taking counts of women who had not attended the intervention but accepted the technologies. After the intervention of home science technologies, a period of three months was given for the acceptance. Further, these three months were divided into 12 weeks to study the pattern of acceptance in the present study. The information regarding the number of respondents accepting home science technologies in each week was recorded. Based on cumulative frequencies of the women who had accepted the home science technologies, the normal distribution curves were drawn. The curves were arrived at taking into consideration the rate of acceptance of home science technologies in each week over period of 12 weeks.

**3.9. Acceptance:**

Acceptance is a process in which individual takes decision to make full use of an innovation as the best course of action available. The respondents were asked to state whether they had accepted the selected technologies or not. The maximum possible score for each technology was five. The total acceptance scores for each individual were calculated to know the acceptance by the respondents. Based on the total scores obtained by all the members, Acceptance index was worked out by using the following formula. The procedure is similar to the one followed by Kurbetta (2016) to calculate acceptance.

$$\text{Acceptance index} = \frac{\text{Scores obtained}}{\text{Obtainable scores}} \times 100$$

**4. RESULTS AND DISCUSSION:**

**Table 1: Distribution of respondents in the diffusion process of home science technologies**

(n=80)

| Sl. No. | Technologies  | Acceptance (n) | raind (n) | iffusion (n) | iffusion percent |
|---------|---------------|----------------|-----------|--------------|------------------|
| 1       | Balanced diet | 32             | 0         | 2            | 4.68             |
| 2       | Weaning foods | 22             | 0         | 2            | 0.09             |

|   |  |    |   |   |      |
|---|--|----|---|---|------|
| 3 | Stain removal techniques                   | 25 | 5 | 0 | 1.47 |
| 4 | Care and storage practices of clothing     | 42 | 5 | 7 | 9.27 |
| 5 | Boiling water and water softening methods  | 04 | 2 | 4 | .83  |
| 6 | Dust mite control technology               | 00 | 0 | 0 | .00  |
| 7 | Toys for stimulating cognitive development | 17 | 7 | 0 | .80  |
| 8 | Health and safety practices for women      | 69 | 0 | 9 | 1.65 |

Table 1 shows the diffusion of home science technologies. It is seen that maximum diffusion was observed for health and safety practices for women (31.65 %). Care and storage practices of clothing was diffused to the extent of 19.27 per cent. In case of balanced diet, stain removal techniques and weaning foods the diffusion percent were 14.68, 11.47 and 10.69 per cent respectively. Low diffusion was observed in the technologies namely toys for stimulating cognitive development and boiling water and water softening methods and the diffusion percent were 7.80 and 1.83 per cent respectively. Whereas no diffusion was observed in case of dust mite control technology. In the present study the maximum diffusion was found in case of health and safety practices for women. These technologies are simple to understand and use and compatible with existing norms. Today’s women are aware about infections and related issues. So, they are more conscious about their health and safety aspects. Intervention programme on these technologies by the experts might have created interest among the rural women and thus leading to increased diffusion. Care and storage practices of clothing has diffused more among the rural women, since these practices are simple to practice, inexpensive and household materials can be used in practicing this technology. Similarly, balanced diet can be prepared with the available materials in the kitchen of the household easily. These might be the reasons for more spreading of these technologies.

**Table 2: Distribution of respondents according to acceptance of home science technologies**

(n=80)

| Weeks        | Technologies  |    |               |    |                          |    |  |    |   |    |                              |    |  |    |                                       |    |
|--------------|---------------|----|---------------|----|--------------------------|----|--|----|---|----|------------------------------|----|--|----|---------------------------------------|----|
|              | Balanced diet |    | Weaning foods |    | Stain removal techniques |    | Care and storage practices of clothing |    | Boiling water and water softening methods |    | Dust mite control technology |    | Toys for stimulating cognitive development |    | Health and safety practices for women |    |
|              | OF            | CF | OF            | CF | OF                       | CF | OF                                     | CF | OF  | CF | OF                           | CF | OF   | CF | OF                                    | CF |
| 1            | 4             | 4  | 0             | 0  | 2                        | 2  | 0                                      | 0  | 4   | 4  | 0                            | 0  | 0  | 0  | 0                                     | 0  |
| 2            | 1             | 5  | 0             | 0  | 0                        | 2  | 1                                      | 1  | 0   | 4  | 0                            | 0  | 0  | 0  | 2                                     | 2  |
| 3            | 0             | 5  | 0             | 0  | 4                        | 6  | 2                                      | 3  | 0   | 4  | 0                            | 0  | 2  | 2  | 3                                     | 5  |
| 4            | 0             | 5  | 0             | 0  | 3                        | 9  | 4                                      | 7  | 0   | 4  | 0                            | 0  | 0  | 2  | 6                                     | 11 |
| 5            | 8             | 13 | 3             | 3  | 0                        | 9  | 10                                     | 17 | 0   | 4  | 0                            | 0  | 2  | 4  | 6                                     | 17 |
| 6            | 0             | 13 | 2             | 5  | 1                        | 10 | 4                                      | 21 | 0   | 4  | 0                            | 0  | 0  | 4  | 17                                    | 34 |
| 7            | 0             | 13 | 0             | 0  | 2                        | 12 | 7                                      | 28 | 0   | 4  | 0                            | 0  | 0  | 4  | 11                                    | 45 |
| 8            | 0             | 13 | 4             | 9  | 2                        | 14 | 7                                      | 35 | 0   | 4  | 0                            | 0  | 10   | 14 | 12                                    | 57 |
| 9            | 10            | 23 | 5             | 14 | 3                        | 17 | 4                                      | 39 | 0   | 4  | 0                            | 0  | 0  | 14 | 9                                     | 66 |
| 10           | 5             | 28 | 1             | 15 | 4                        | 21 | 3                                      | 42 | 0   | 4  | 0                            | 0  | 0  | 14 | 3                                     | 69 |
| 11           | 0             | 28 | 6             | 21 | 0                        | 21 | 0                                      | 42 | 0   | 4  | 0                            | 0  | 3  | 17 | 0                                     | 69 |
| 12           | 4             | 32 | 1             | 22 | 4                        | 25 | 0                                      | 42 | 0   | 4  | 0                            | 0  | 0  | 17 | 0                                     | 69 |
| <b>Total</b> | <b>32</b>     |    | <b>22</b>     |    | <b>25</b>                |    | <b>42</b>                              |    | <b>4</b>                                  |    | <b>0</b>                     |    | <b>17</b>                                  |    | <b>69</b>                             |    |

Note: OF- Observed Frequency  
 CF- Cumulative Frequency

Figure-1

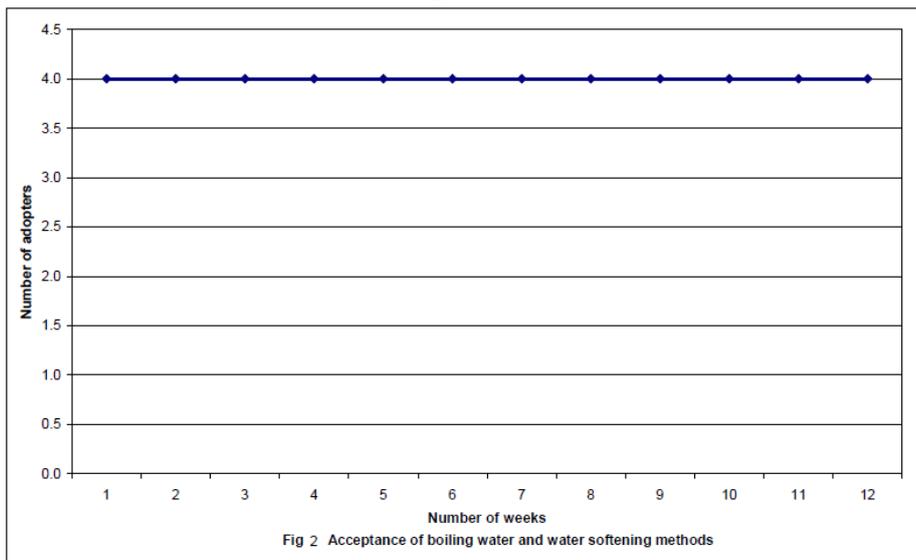


Figure-2

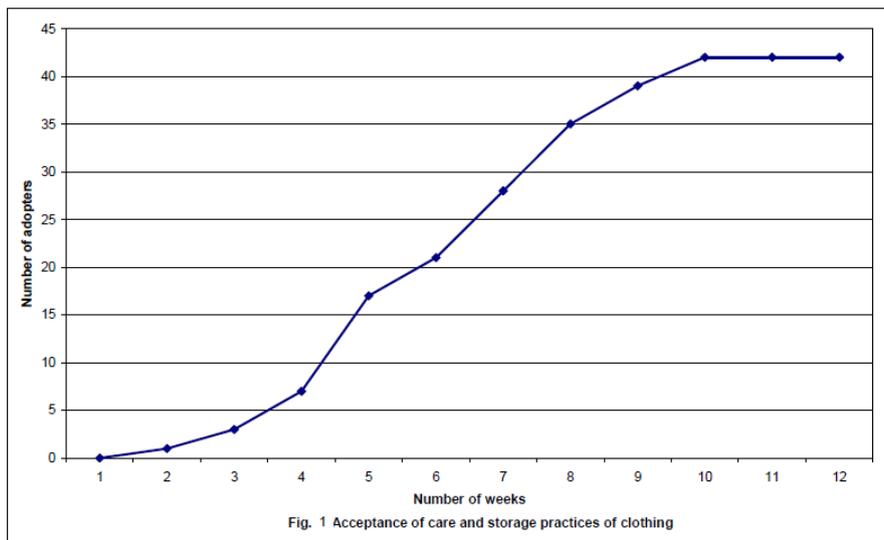
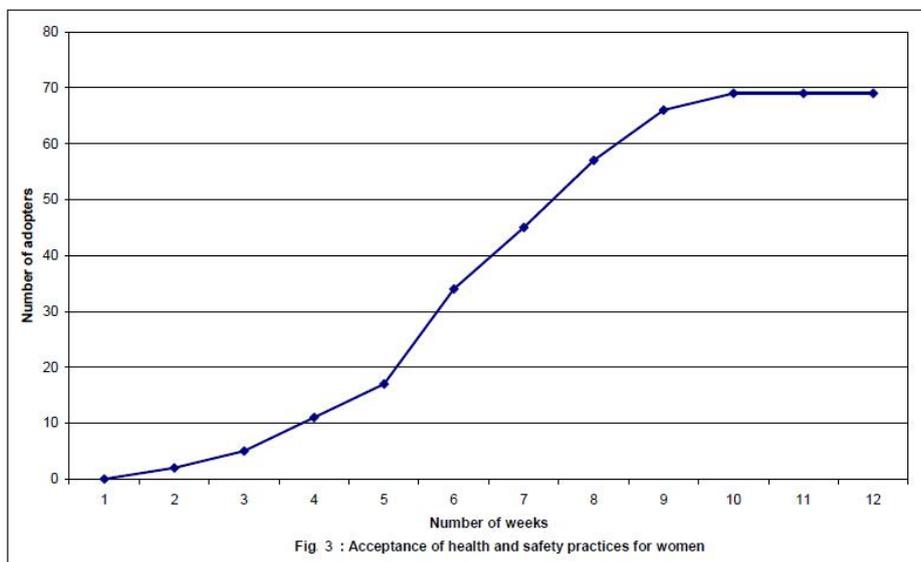


Figure-3



As it could be observed from the Table 2 that in the first week, the week of introduction of balanced diet in the selected village, 4 respondents accepted to prepare balanced diet. This number decreased to 1 in the 2<sup>nd</sup> week and 0 in the 3<sup>rd</sup> and 4<sup>th</sup> weeks. However, the maximum number of acceptors *i.e.*, 10 respondents were observed in the 9<sup>th</sup> week. Then onwards in the 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> week, the number of acceptors decreased to 5, 0 and 4 respectively. In the 12<sup>th</sup> week, the cumulative number of respondents accepting balanced diet was 32. During 1<sup>st</sup> week, after introduction of weaning foods in the selected villages, none of the respondent had accepted weaning foods as an implementable technology. In the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> week also the number did not increase. However, this number rose to 3 in the 5<sup>th</sup> week and decreased to 2 in 6<sup>th</sup> week. The maximum number of acceptors *i.e.*, 6 respondents were observed in 11<sup>th</sup> week. Then onwards in the last week the number of acceptors fell down to only 1. In the 12<sup>th</sup> week the cumulative number of respondents accepting weaning foods was 22.

A close perusal of the Table 2 shows that, in the 1<sup>st</sup> week, the week of introduction of stain removal techniques in selected villages, only 2 respondents had accepted stain removal techniques. This number decreased to 0 in the 2<sup>nd</sup> week and again increased to 4 in the 3<sup>rd</sup> week. While, equal number of acceptors *i.e.*, 2 respondents were noticed in 7<sup>th</sup> and 8<sup>th</sup> week. Then onwards in the 9<sup>th</sup>, 10<sup>th</sup> week the number of respondents increased to 3 and 4 respectively. In the last week, the cumulative number of respondents accepting stain removal techniques was 25. Table 2 and Fig.1 depicts that in the first week of introduction of the technology on care and storage practices of clothing in selected villages, none of the respondents had accepted the technology. This number rose to 1 in 2<sup>nd</sup> week and 2 in 3<sup>rd</sup> week. The maximum number of acceptors *i.e.*, 10 was observed in 5<sup>th</sup> week. Whereas in the 6<sup>th</sup> week the number of acceptors decreased to 4 and remained constant in 7<sup>th</sup> and 8<sup>th</sup> week *i.e.* 7 acceptors in each week. Then onwards in the 9<sup>th</sup> and 10<sup>th</sup> week, the number of acceptors again decreased *i.e.*, 4 and 3 respectively. In the 11<sup>th</sup> and 12<sup>th</sup> week none of the respondent accepted care and storage practices of clothing. In the 12<sup>th</sup> week, the cumulative number of respondents accepting care and storage practices of clothing was 42.

A cursory look at the Table 2 indicated that, in the 1<sup>st</sup> week, only 4 respondents accepted drinking boiled water and water softening methods. Then onwards, in the subsequent weeks none of the respondents accepted these methods. In the 12<sup>th</sup> week, the cumulative number of respondents accepting drinking boiled water and water softening methods was only 4. In rural areas most of the people are not aware of the scientific reason about drinking boiled water. They drink only lukewarm water during sickness and postpartum. Their perceptions about drinking boiled water have already been discussed earlier. They also find carrying boiled water in cans and bottles to the farm and work place is tedious and burdensome. Having developed a taste for hard water, they do not bother to reduce hardness by using herbal materials like amla and cloves. They have never attributed their sickness or health to the poor quality of water and so did not feel the need for these technologies. Even though knowledge intervention on dust mite control solution was provided, respondents rejected the technology, because most of the respondents owned kaccha houses and they hardly clean floor. In most rural areas of the country not much importance is given to cleanliness. Knowing very well the consequence of unclean surrounding, today the government has initiated several programmes like Swachh Bharat Abhiyan to keep the house and public places clean in the country. The present finding is also consistent to the situation in the country.

In the first 2 weeks, of introduction of toys for stimulating cognitive development, none of the respondent had accepted the technology (Table 2). This number rose to 2 in 3<sup>rd</sup> week and became 0 in the 4<sup>th</sup> week. The maximum number of acceptors *i.e.*, 10 respondents were observed in the 8<sup>th</sup> week. Then onwards in the 9<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> week the numbers of acceptors became 0, 0 and 3 respectively. In the last week (12<sup>th</sup>) also none of the respondent had accepted the technology. Number of respondents accepting toys for stimulating cognitive development was 17. Traditionally in rural areas no toys are purchased except for some plastic or rubber toys in the local fairs. The children grow up with older siblings and grandparents. The children play with things available in nature like twigs, seeds, stones, mud and sand etc. Some low priced and sound producing toy like rattles are purchased in the fairs. These are the reasons for low acceptance of toys. The data of Table 2 and Fig. 2 also reveals that, in the first week, of introduction of health and safety practices for women in the selected villages, none of the respondent had accepted the practices. This number rose to 2 in the 2<sup>nd</sup> week, and 3 in 3<sup>rd</sup> week. The maximum number of acceptors *i.e.*, 17, 11 and 12 respondents were observed in 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> week respectively. From the 9<sup>th</sup> week and 10<sup>th</sup> week onwards the number of acceptors again decreased to 9 and 3 respectively. In the 11<sup>th</sup> and 12<sup>th</sup> week, none of the respondents accepted the technology; hence in the 12<sup>th</sup> week the cumulative number of respondents accepting health and safety practices was by 69 women. The health and safety practices are easy and simple to practice, cost effective, easily available and within the reach of the rural women. Rural women accepted that taking bath during menstruation keeps the body clean and avoids infections. They have realized that during menstruation, attending social and religious ceremonies like marriages, naming the child and going to temples is not wrong as long as hygiene is maintained. Rural women also accepted that use of water after urination and drying sanitary cloth pads in sunlight are good practices. Women also feared about infections during menstruation by using unhygienic cloth 161 pads. So some women decided to use sanitary pads distributed by Accredited Social Health Activist worker from the health department. Therefore, the acceptance was quiet high. The

results are in line with the research findings of Juyal et al. (2012) who revealed that most of the girls accepted menstruation hygiene and said that education played an important role. Similar findings are also reported by Tagemina (2015). The curve drawn for cumulative number of rural women accepting home science technologies over a period of time (acceptance curve) followed an almost 'S' shape for care and storage practices of clothing (Fig.1) and health and safety practices for women (Fig.2) Whereas, the curve was scattered for balanced diet, weaning foods, stain removal techniques and toys for stimulating cognitive development. There was no curve (Fig. 3) and straight line observed in case of water boiling technology its acceptance was zero.

## 5. RECOMENDATIONS:

The diffusion pattern of home science technology except care and storage practices of clothing and health and safety practices for women, followed erratic adoption over a period of time. Extension functionaries diffusing home science technologies could observe the lacunae in the adoption of these home science technologies and find means to overcome the barriers.

The present study was conducted on the diffusion and acceptance of eight home science technologies only. Diffusion of other important home science technologies can also be studied.

Due to the limitation of time and resources of the student researcher, the study was conducted only in two villages of Dharwad taluk of Dharwad district and with limited variables, there is the fore scope for further study. While organizing intervention programmes to rural people, only lectures, demonstrations were used. Whereas other newer methods like multimedia and animations also be used to make teaching-learning more effective.

## 6. CONCLUSION:

The diffusion pattern of home science technology except care and storage practices of clothing and health and safety practices for women, followed erratic acceptance over a period of time. These technologies are need based on the part of rural women. They are also perceived as relatively advantageous, less complex, trailable, compatible with their culture and have observable results. The remaining home science technologies namely balanced diet, weaning foods, stain removal methods, toys for cognitive development have been adopted moderately by the rural women even though they are need based. Whereas, the diffusion of water boiling and control of dust mite control technology were largely unsuccessful and failed because they are perceived as culturally inappropriate by the rural women. Hence, extension functionaries diffusing home science technologies could observe the lacunae in the adoption of these home science technologies and find means to overcome the barriers.

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