

Effect of Multimedia on Preparation of Traditional Dairy Products at the Household Level

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ABSTRACT

India is the largest milk producer in the world. Very less amount of the produced milk is being processed at organized and unorganized sector. Hence, majority of the milk is remained unprocessed. Then, the role of the extension personnel has to play an important role in order to impart knowledge and skill. Therefore, a multimedia was developed by National Dairy Research Institute on production procedure of traditional dairy products. A total 96 respondents were selected from the eight villages of the Karnal district of Haryana by using simple random sampling method to quantify the effect of the developed multimedia on knowledge gain and knowledge retention and to document the changes in production procedure of traditional dairy products due to exposure of the multimedia. It was found that there was a significant gain in the knowledge level and considerable change in retention of the gained information regarding production procedure of the traditional dairy products due to exposure to the multimedia. The changes were observed in the method of preparation of dahi, ghee and paneer which were highly desirable for the quality dairy product. Hence, this type of extension intervention may help the rural dairy farmers to produce quality dairy products which may lead their economic prosperity in future.

Key words: Traditional dairy products; Knowledge gain; Knowledge retention; Multimedia;

As per the National Dairy Development Board (NDDB) report of 2016-17 India ranked first in milk production globally, achieving an annual output of 165.4 million tonnes during 2016-17. Further, the per capita availability of milk in India has also increased to 355 grams per day in 2016-17. But in the country like India, where tropical regions prevail, it is impossible to maintain quality and increase the self-life of milk without the use of technology. Therefore, ancient Indians have developed more stable milk products which have more shelf life, products from milk are being prepared for conservation of its nutritional goodness. So the dairy foods, commonly termed as Indian/Traditional indigenous dairy products, were developed over ages which predominantly use the locally available equipment, utensils and manufacturing procedures. It not only increases the shelf-life of the product but it also leads to the value addition of the milk. (De, 2008)

Also the growth and urbanisation of the population has increased the demand for milk products in many

folds in recent past. Dairy industry also provides livelihood to millions of homes in villages, ensuring supply of quality milk products to people in both urban and rural areas. So, processing of milk will lead to the development of the farmers to a great extent. The organized sector handles major portion of the total milk produced in the country. Hence, majority of the milk remains unprocessed. Milk processing can be enhanced by imparting knowledge and skills about the method & practices of dairy processing.

Major role of the dairy extension personnel is to impart knowledge and skill to the people who don't have relevant knowledge pertinent to the value-addition in milk/dairy products. But it is a very tedious job for the extension personnel in order to contact the respondents from each and every household of the Indian society. Thus, extension strategies should focus on limited personal contact of extension professionals for dissemination of information; and herein lays the importance of multimedia.

Dissemination of information techniques and mode of delivery to the farmers about available knowledge have changed. Farmer training in developing nations has benefitted from the use of radio and video for many decades. (Sulaiman, et al., 2012). Adetumbi et.al. (2013) in their study reported that mobile phone, radio and television are the most useful ICTs used for information dissemination among farmers on pre-planting operations, post-planting operations and livestock issues. In view of these issues prevailing at the field level, the present study was undertaken with following objectives-

- i. To assess the respondents' knowledge gain and retention due to their exposure to multimedia;
- ii. To obtain the feedback of the respondents regarding the utility of the multimedia vis-à-vis change in method of preparation of traditional dairy products.

METHODOLOGY

ICAR-NDRI Karnal is implementing flagship extension programme of ICAR namely Mera Gaon Mera Gaurav in the nearby villages of Karnal Districts. From these villages, eight villages were selected randomly namely Mangalpur, Kulvehri, Budha Khera, Garhi Gujran, Samora, Churni, Kamalpur Roran and Subhri. From each village, a total of twelve respondents were selected by simple random sampling method from each village who were involved in dairy processing or preparation of at least two traditional dairy products like *Ghee, Khoya, Gulab Jamun, Dahi, Lassi* etc. at the household level, also they would have been not undergone through any kind of training programme related to the method of preparation of dairy products. Thus a total of 96 respondents were selected for this study.

Pre-test post-test experimental design was used to identify the effectiveness of multimedia on the knowledge gain and retention on the preparation of traditional dairy products. A knowledge test developed by Chatterjee (2018) was adopted in order to carry out the pre-test and post – test. There was gap of fifteen days and thirty days between the Pre-test and post-test. To assess the knowledge gain and retention, response of the sample was observed twice with the gap of fifteen days and thirty days after the exposure to the multimedia. Finally, knowledge gain was calculated by using the following formula:

$$\text{Knowledge gain} = \text{Post-test score} - \text{Pre-test score}$$

The questions which were administered for measuring the gain in knowledge were used again for

assessing the retention after the interval of 15 days and 30 days, respectively (Fig. 1). The difference between the scores obtained after 15 days and 30 days of exposure and pre-exposure was calculated for each respondent, separately using the formula:

$$\text{Knowledge1} = \frac{\text{PoTS after 15 days} - \text{PrTS}}{\text{PoTS} - \text{PrTS}} \times 100$$

$$\text{Knowledge2} = \frac{\text{PoTS after 30 days} - \text{PrTS}}{\text{PoTS} - \text{PrTS}} \times 100$$

Where:

Knowledge1=Knowledge Retention after 15 days

Knowledge2=Knowledge Retention after 30 days

PoTS=Post Test Score

PrTS=PreTest Score

Change in method of preparation with respect to traditional dairy products: It was operationally defined as the change in the method of preparation with respect to traditional dairy products at the household level, after the intervention of the multimedia. In order to carry out the work, exploratory research design was used. A semi-structured interview schedule was prepared to document the changes in the method of preparation of traditional dairy products and feedbacks were collected on the utility of developed multimedia.

The respondents were interviewed, personally, at their desired location; and the responses were carefully recorded. The interviews were conducted during the period from December 2017 to March 2018 for pre-testing as well as for exposing them to the multimedia at their doorsteps. After a gap of 15 days and 30 days, post-tests were conducted with the help of the same structured interview-schedule. The responses were recorded and filled in interview-schedule during both the pre-test and post-test, which were scrutinized and tested immediately for their completeness in all aspects.

For the data analysis of the data Wilcoxon Sign Test, average, standard-deviation and percentages were applied for the non-parametric population of 96 respondents by using SPSS Version 23.

RESULTS AND DISCUSSION

Figure 1 depicts that the mean pre-test knowledge scores, determined before the exposure to the multimedia video was found to be 4.48 and the mean knowledge post-test score, which was determined after the immediate exposure to the multimedia was found to be 8.74. It shows a considerable increase in the knowledge

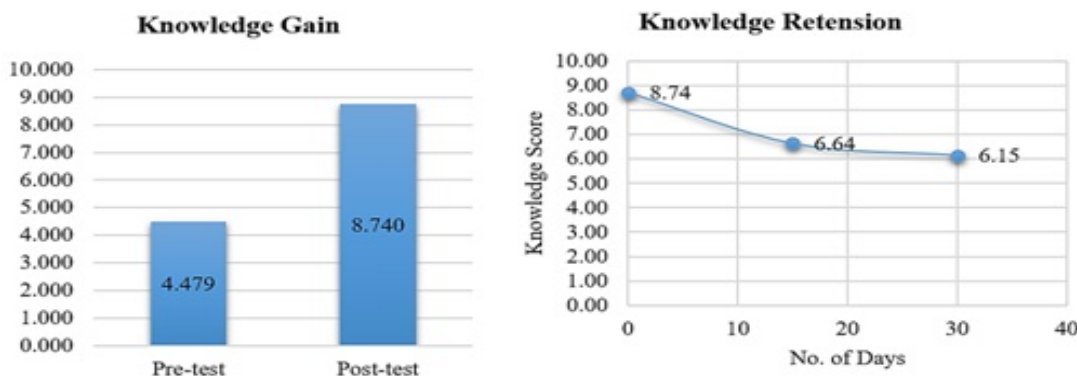


Fig.2. Knowledge gain and retention of villages

level and mean increase of knowledge level was found to be 4.26 in the villages. But, the mean knowledge score after 15 days and 30 days of the exposure to multimedia was found to be 6.64, and 6.15, respectively. *Comparative evaluation of knowledge gain due to exposure of the multimedia:* It is clear from Table 1 that in the overall scenario of the villages there was a net knowledge gain of 38.73 percent by the respondents. The same table also depicts a significant increase in the knowledge levels in all the villages at one percent level of significance. Also, from these eight villages the village *Garhi Gujran* ranked first in the gain of knowledge by the respondents with a score of 49.242 percent. It is because the respondents were more interested and have the need in learning the method of preparation of traditional dairy products as compared to other villages. The more the people were motivated to watch the multimedia the more they gained the knowledge. Also the people who have gained better knowledge have practiced the method after watching multimedia at their homes.

From the Table 2 it is depicted that there was a considerable decrease in the retention of information gain by the respondents of the studied villages after the exposure of 15 days and 30 days of the exposure to multimedia. On overall respondents retained only 50.61 percent of the gained information after 15 days of the exposure to the multimedia and only 39.12 percent retention after 30 days of the exposure to multimedia. It also depicts a significant retention of the information in all the villages except *Kamalpur Roran*. The reason is that the presentation of the multimedia was done during their busy schedule in a relatively noisy environment which decreases their interest in watching and in turn affected their retention capacity. But, most villages who took much interest and have the need in the preparation of these dairy products were most likely to retain more than others. But with the increase in time span i.e. from 15 to 30 days, most of the respondents didn't remember the exact factual information (eg. Temperature, weight, concentration etc.), but rather they still retain the basic

Table 1. Knowledge gain of the respondents (N=96)

Villages	Pre-test		Post-test		Knowledge	Relative Knowledge%	Z Statistic [#]	P value
	Score %	Knowledge	Score %	Knowledge Gain				
Mangalpur	4.267	38.788	8.467	76.970	38.182	98.44	-3.305	0.001**
Kulvehri	5.067	46.061	9.467	86.061	40.000	86.84	-3.420	0.001**
Budha Khera	3.667	33.333	8.000	72.727	39.e394	118.18	-3.097	0.002**
GarhiGujran	3.917	35.606	9.333	84.848	49.242	138.30	-3.081	0.002**
Samora	4.667	42.424	8.500	77.273	34.848	82.14	-3.075	0.002**
Churni	4.417	40.152	8.833	80.303	40.152	100.00	-3.088	0.002**
Kamalpur Roran	4.833	43.939	8.833	80.303	36.364	82.76	-3.071	0.002**
Subhri	4.750	43.182	8.583	78.030	34.848	80.70	-3.089	0.002**
Overall	4.479	40.720	8.740	79.451	38.731	95.12	-8.513	0.000**

based on Wilcoxon sign test; ** Significant at 1 % level of significance; * Significant at 5 % level of significance

Table 2. Knowledge retention of the respondents (N=96)

Villages	After 15 Days			After 30 Days			Z Statistics#	P value
	Knowledge Index	Knowledge Gain	% retention	Knowledge Index	Knowledge Gain	% retention		
Mangalpur	61.212	22.424	58.730	55.152	16.364	42.857	-1.996	0.046*
Kulvehri	73.333	27.273	68.182	64.242	18.182	45.455	-2.877	0.004*
Budha Khera	55.303	21.970	55.769	52.273	18.939	48.077	-2.000	0.046*
GarhiGujran	56.818	21.212	43.077	53.788	18.182	36.923	-2.000	0.046*
Samora	57.576	15.152	43.478	54.545	12.121	34.783	-2.000	0.046*
Churni	57.576	17.424	43.396	53.030	12.879	32.075	-2.449	0.014*
Kamalpur Roran	60.606	16.667	45.833	56.818	12.879	35.417	-1.890	0.59
Subhri	59.848	16.667	47.826	56.061	12.879	36.957	-2.236	0.025*
Overall	60.322	19.602	50.611	55.871	15.152	39.120	-5.653	0.000**

#based on Wilcoxon sign test, **Significant at 1 % level of significance; *Significant at 5 % level of significance

information regarding steps for performing the preparation of traditional dairy products.

The results obtained are in accordance with those of *Nirmala (2014)* who observed similar findings in her study of knowledge gain and retention, a study conducted among the respondents of Andhra Pradesh. Also the results are in line with the results obtained by *Yelvattimath et al. (2014)* in the study of Knowledge gain of the rural women through environment and health programmes conducted in villages of Dharwad Taluk of Karnataka. The results are also consistent with the results found by *Vidya et al (2010)*, *Sasikala et al. (2012)*, *Sharma (2009)* and *Roy & Tiwari (2014)*.

Feedback of the respondents: The following few changes were observed in the method of preparation of *Dahi*, *Ghee* and *Paneer*:

A. change in the method of preparation of paneer

- Instead of using alum, lemon, sour etc. they start using Citric Acid as coagulant.
- They start using the appropriate amount of citric acid solution i.e. 2 per cent.
- They changed the amount of weight applied on the coagulants collected in a muslin cloth to 2-3 kg/cm².
- They have changed the period of time to 15-20 min for applying the weight on *Paneer* block
- After removing the weight, they started to put the paneer block into cold water (10°C) for an hour.

B. Change in the Method of preparation of Dahi

- The respondents have reduced their inoculation time from 8-10 hrs. to 6-8 hrs. at 29-34°C
- The Optimum amount of starter culture was changed to the amount of up to 1.5% of the milk

C. Change in the method of preparation of ghee

- They changed the indicator point of 'stop heating' when the product start taking its granular form and flavor start coming out with a crackling sound.

Feedback of respondents towards multimedia: It was being depicted that 42.71 percent were satisfied to get a credible source of information regarding preparation of traditional dairy product at the household level from the developed multimedia. According to the feedback of 17.71 percent respondents on account of exposure to the multimedia followed by enhancement in the level of knowledge the quality of products being made at household level seems to be relatively superior & better. A kind of simulation training experience was perceived by 12.5 per cent of respondents who couldn't undergo training for the preparation of traditional dairy products at the household level. Even after getting exposure to the multimedia on traditional dairy products only 23.96 percent respondents preferred to have a copy of the multimedia under their possession for future use and references (including clarifying doubts as and when required) besides sharing with their relatives and friends. 32.29 percent respondents got an opportunity to see the scientific tools, gadgets and implements being used in the preparation of traditional dairy products through multimedia and 14.58 per cent get the opportunity to learn about the preparation of traditional dairy product in a hygienic manner. Only 8.33 per cent respondents learnt about the significance of fat percentage and temperature during the process of preparation of traditional dairy products. Along with these feedbacks majority of the respondents had the opportunity to get

the knowledge as well as to learn the scientific techniques/methods being used for the preparation of traditional dairy products.

The results are consistent with the results found by Olaniyi (2013) who observed that the poultry farmers in the study area had opined better infrastructure, such as electricity supply and skill acquisition for maximum utilization of the potentials of ICTs.

CONCLUSION

It is concluded from the above study that the respondents could retain better information as compared to verbal communication and illustration only in this

aspect multimedia plays an important role in enhancing the knowledge level of respondents. In this aspect also the persons who grew out of need and interest about the method of preparation were more efficient in gaining and retaining the information. Due to the limited personal contact of extension agents, those persons who are not in close proximity of the training facilities could also easily learn the method of preparation of traditional dairy products through this intervention. The more the people become motivated, more they will learn better. But only mere viewing the multimedia is not enough but practicing along with the viewing of multimedia video could aid them in learning more efficiently.

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