

Effectiveness of Digital information module in influencing symbolic adoption of Transition Period practices

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ABSTRACT

Communication and information is being recognized as an important input for sustainable development of agriculture and livestock production system. Thus the recent information revolution by Information and Communication Technology (ICTs) has potential to provide a greater quantum of information in the shortest possible time. But the challenge is to improve the accessibility of farmers to information for increasing the production and thereby improving the economy of farmers. Thus a digital information module about transition period covering the topic of dry period, pre partum, post-partum and calving management was prepared and its effectiveness was tested in influencing symbolic adoption of Transition Period practices. A total sample size of 160 dairy farmers were exposed to digital information module and first-hand information about adoption of practices was collected. It could be observed that the adoption index was highest (32.12%) for prepartum management practices. It was further noticed that the adoption index of dry period management (29.87%) and post-partum management (21.37%). The major problem encountered by the respondent during transition period was the economic loss due to decreased reproductive efficiency (87.25 %), delay in appropriate treatment of reproductive disorders (86.25 %) and transportation of animal become difficult during peripartum period for treatment (82.75%) which were ranked first, second and third respectively. It was further revealed that the variables like age, family education status, experience in dairying, ICT availability and ICT utilization pattern and knowledge were significant correlated with adoption of respondents.

Key word: *Adoption, bilingual, Effectiveness, Digital Information module, ICTs, Transition period*

INTRODUCTION

In today's world of competition –“information” is the key to success. Availability of right information at the right time can make all the difference. The real potential of Information Communication Technology (ICTs) lies in the fact that ICTs have revolutionized the means for transmission of information and communication of knowledge. Rapid technological advancement and continuous changing farming system have highlighted the need of effective transfer of knowledge and skill to farmers (ICT for the common man) through various communication media. Information is mainly used by the farming community for making effective decision in specific areas like feeding, breeding, management and healthcare management (Subhash, 2009). Among

the various means of mass communication, multimedia is one of the most versatile audiovisual medium of communication (Brun&Mangstl, 2001). Multimedia instructional material allows the learner actually to see, hear and use the content to be learned. These digital multimedia devices provides a higher level of mastery over the subject matter, which gives students “hands on” learning, better retention, specific feedback and increased levels of understanding (Andara, 1999). These digital, multimedia enriched information module are combination of texts, graphics, still images, animation, video and audio were ideally suited to demonstrate complex and dynamic process that cannot be explained easily with conventional media and methods (Randall Bass, 2015). However, the recent trend in livestock sector growth suggests that

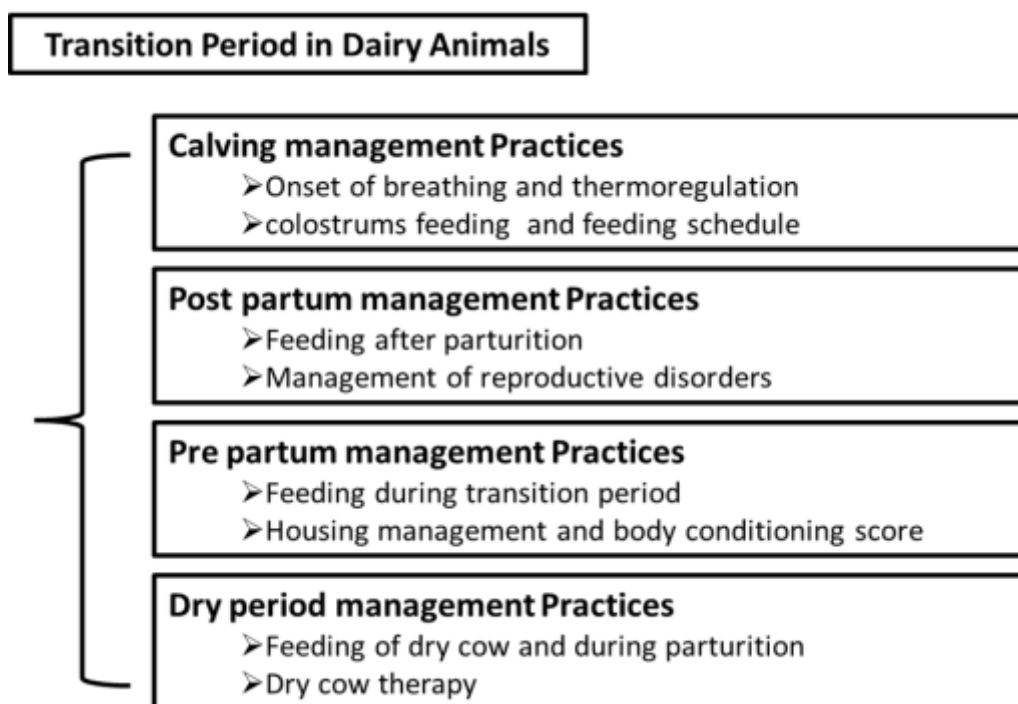
in order to meet the emerging demand for livestock based products, both in domestic and global markets as well as huge for huge livestock population, there is a need to reorient the production system by enhancing the efficiency and creating quality consciousness. The productivity of dairy animals basically depends upon productive and reproductive trait, which should be optimum for having a positive influence in economics of milk production. Likewise a smooth transition from the late dry period through early lactation has profound impacts on the success of both the lactation and conception (Singh et al., 2015). Transition period which is one of the challenging periods for dairy animals is defined as period three weeks before calving and three weeks after calving. Dairy animals often fail to adapt to the metabolic and management changes, resulting in 75.00 per cent of dairy animal disease incidence during the first month after calving (Leblanc, 2010). Thus to provide support services to farmers in the area of transition period a digital information module was developed using the location specific details and language.

Information module was embed with various electronic materials like video, audio, graphic and image in the area of dry period management, prepartum, postpartum and calf management. Keeping these in view the present study was planned to study the effectiveness of digital information module in influencing symbolic adoption of Transition Period practices

Materials and Methods

Digital information module, being interactive in nature are ideally suited to demonstrate complex and dynamic processes that cannot be explained easily by using conventional media and methods. Thus a digital information module on transition period was developed in bilingual mode (Hindi and English language) to assess the effectiveness of bilingual information module in influencing symbolic adoption of transition period. For easy understanding the module had portion like dry period management, prepartum, postpartum and calf management.

Figure-1
Component of Digital information module on Transition Period



A structured interview schedule covering all the aspects of scientific management practices during transition period in was developed. The study was taken up in Agra Division of Uttar Pradesh. The state is having highest population of cattle and buffalo (19.50 and 30.61 million) as well as highest milk producer in country (30.57 million tonnes). A total sample size of 160 dairy farmers was interviewed to get first-hand information about adoption of practices. The term “symbolic adoption” was used by Klonglan and Coward, 1970 to describe the mental acceptance of an innovation as a good idea. They argued that any new artifact or idea involves both an “idea” component and an “object” component, corresponding respectively to symbolic and action forms of adoption. The practices related to transition period were divided into dry period, pre partum, post-partum and calving management. The farmers were exposed to the Digital Information module. The response of respondent were taken against each practices on three point continuum representing adopted, partially adopted and not adopted with score 2, 1 and 0 respectively.

$$\text{Adoption index} = \frac{\text{Mean score obtained}}{\text{Maximum obtainable score}} \times 100$$

The maximum obtained score of each

practices in each category was 10. Thus the minimum and maximum obtainable score of the overall adoption of recommended practices ranged from 0 and 40 respectively. Pearson's Correlation Analysis with Adoption were employed to determine the factors influencing the symbolic adoption behavior of dairy farmers.

Results and Discussion

Since the respondents were practicing dairy farming but due to inadequate information about importance of transition period management and inadequate knowledge about Interrelationship of disorders the adoption was low. The data was analyzed and adoption index of the practices in transition period were presented in Table 1.

It could be observed that the adoption index was highest (32.12%) for prepartum management practices. It was further noticed that the adoption index of dry period management (29.87%), post-partum management (21.37%) and calving management (23.62%). The pooled adoption of all the practices on transition period was 27.25 per cent. However, the respondents were convinced of the practice that were shown to them through information module resulting in adoption of practices.

Table-1
Adoption of Transition Period practices after exposure to information module

S No.	Recommended practices	FA	PA	NA	Adoption Index
A	Dry period management Practices				
1	Practicing dry period of 60 days to pregnant dairy animal	28	44	88	31.25
2	Pregnant animal should be fed 30-50 g of mineral mixture during transition period	16	36	108	21.25
3	Advanced pregnant animal should be house separately with good bedding material and feed space	40	56	64	42.50
4	Steaming up diet i.e. Advanced pregnant dairy animal should be fed 1.5-2 kg of concentrate per day	80	44	36	63.75
5	Supplementation of DCAD like ammonium chloride to animal during dry period	0	44	116	13.75
B	Pre partum management Practices				
1	Keeping close watch on pregnant animal for parturition	4	104	52	35.00
2	Practicing calcium supplementation to animal just before parturition to prevent milk fever	28	48	84	32.50
3	Practicing proper disposal of placenta after parturition	64	60	36	58.75
4	Practicing for getting assistance from veterinarian for dystocia and torsion	0	32	128	10.00
5	Practicing cleaning of hind quarter of animal after parturition	48	72	40	52.50

C	Post partum management Practices				
1	Providing clean water and gruel to animal just after parturition	104	44	12	78.75
2	Practicing cleaning of animal after parturition and consulting veterinarian after 12 hours of the retention of foetal membrane.	16	72	72	32.50
3	Practicing the practice of checking the animal regularly for any abnormal discharge after parturition	24	88	48	42.50
4	Practicing mastitis management by keeping the animal standing for 10-20 minute after milking.	80	28	52	58.75
5	Practicing emptying the udder of animal after milking by stripping	0	20	140	6.25
D	Calf management Practices				
1	Practicing proper management of cutting the navel cord of new born calf	36	36	88	33.75
2	Feeding colostrum to new born calf within 2 hour after birth	24	72	64	37.50
3	Feeding 1/10 th of milk to new born calf for 10 days	32	60	68	38.75
4	Practicing dehorning in claws before 15 days of age	8	40	112	17.50
5	Maintaining cleanliness in calf/animal shed	80	68	12	71.25

FA= Fully Adopted; PA= Partially Adopted; NA= Not Adopted

Ranjith (2012) stated that the interactive multimedia module (DVD) was highly effective in enhancing the willingness to adopt the improved dairy farming practices. He further reveals that about 85.00 per cent of dairy farmers decided to adopt the practices like Artificial Insemination, colostrum feeding and cleaning of shed. The DVD exposure had the farmers as 60.00 per cent dairy farmers decided to adopt the practice of balance feeding to their animals and more than 75.00 percent of the farmers symbolically adopted timely vaccination, isolation of sick animals and treatment of animal against infectious disease.

Problems faced during Transition Period

The problem encountered by the respondent during transition period were analyzed and presented in table2. It was seen that the Economic loss due to decreased reproductive efficiency (87.25 %), delay in appropriate treatment

of reproductive disorders (86.25%) and transportation of animal become difficult during peripartum period for treatment (82.75%) were ranked first, second and third respectively. Dairying is recognized as an economic activity by farmers. Occurrence of these disorders results in direct (loss of animal) or indirect (loss due to reduction in milk production, higher calving interval etc) economic loss to the farmers. These losses were further enhanced by other interlinked disorders. The other problems includes poor veterinary facilities during emergency hours (81.20%), reduced conception rate due to reproductive disorder in animals (77.80%), loss of milk yield after disorder occurrence in animals (74.70%), inadequate knowledge about Interrelationship of disorders (74.65%) and inadequate information about importance of transition period management(71.65%) respectively.

Table-2
Major Problem faced by the respondent during the transition period of dairy animals

n=160

S. No.	Problems	Weighted score (%)	Rank
1.	Economic loss due to decreased reproductive efficiency	87.25	I
2.	Inadequate knowledge about Interrelationship of disorders	74.65	VII
3.	Delay in appropriate treatment of reproductive disorders	86.25	II
4.	Inadequate information about importance of transition period management	71.65	VIII
5.	Mishandling of reproductive cases by incompetent person	64.50	X
6.	Transportation of animal become difficult during peripartum period for treatment	82.75	III
7.	Loss of milk yield after disorder occurrence in animals	81.20	VI
8.	Reduced conception rate due to reproductive disorder in animals	77.80	V
9.	Reduced intake of feed during reproductive disorders	68.20	IX
10.	Poor Veterinary facilities during emergency hours	74.70	IV

Meena et al., (2014) also revealed the constraint face by farmer in reproductive and productive traits includes lack of awareness of farmers about various reproductive stages of dairy animals, lack of knowledge in silent heat and balanced feeding, high cost of treatment of reproductive disorder and poor availability of green fodder. Similar constraint stated by Subhashet al., (2012) that non-availability of veterinary hospitals, high cost of treatment, ignorance about government facilities and timely non-availability of vaccination were main constraints in reducing the reproductive disorders.

Pearson's Correlation Analysis with Adoption

Adoption of a technology takes different time across the different categories of the farmers in the society. The present study has given emphasis on correlation analysis between the number of independent variables and adoption of practices of transition period and the result has presented in table 3. The study has find out that adoption has significant correlation with the variables like age, family education status, experience in dairying, ICT availability and ICT utilization pattern and knowledge possessing by the respondents.

Table-3
Correlation between independent variable and adoption

n=80

S. No.	Independent variables	'r' value
1	Age	0.389**
2	Education	0.065
3	Family education status	0.379**
4	Herd Size	0.015
5	Social Participation	0.264*
6	Experience	0.425**
7	ICT availability	0.246*
8	ICT utilization	0.461**
9	Cosmopolite channel	0.086
10	Knowledge	0.773*

**Significant at 0.01 level of significance *Significant at 0.05 level of significance

The present study has find out that adoption was highly correlated with the age of the respondent in the study area. Increase in age help the respondents to have experience and change in attitude in different aspect of the farming system and this might be the possible reason behind the adoption of different practices of transition period of dairy animals by the respondents. It was observed that family education status was highly correlated with the adoption of the different technologies, here in this study higher education level possess by the family members help farmers to gain in knowledge or drive them to seek information about different technologies and coerce them to adopt the different technologies regarding dairying.

Experience possessing by the respondents has significant correlation with the adoption of different farming practices. Experience enriches the knowledge or attitude of the farmer which leads more adoption of dairy farming practices. The utilization of different ICT tools may supplement the farmer's idea, knowledge etc. about different aspect of farming system. Use of ICT tools had significant correlation with the adoption of the practices. In this present study increase in ICT utilization enrich the information, and it might be the possible reason behind the adoption of the different practices of transition period of dairy animals. Other than these social participation of the farmers, knowledge possessing by them has

significant correlation with the adoption at 5.00 percent of significance. Kumar and Sankarakumar, 2012 stated that the common problems in adoption of ICT in rural segments are ICT illiteracy, availability of relevant and localized contents in their own languages, easy and affordable accessibility and other issues such as awareness and willingness for adoption of new technologies among the rural peoples etc. He further emphasizes the use of Information and Communication Technology (ICT) at village level as one among which is helping the farmers for increasing the production and productivity.

CONCLUSION

Digital technologies are acting as an accelerating force behind the productivity of farmers in agriculture as well as livestock sector. The main focus of ICT in livestock sector is to meet the

farmers" vital needs for information like information on latest techniques and technologies about transition period. The study concluded that the ICT based information modules are effective in disseminating useful, need based information as well as influencing the adoption of practices to the farmers. Higher adoption of practices via developed information module was due to development of locally relevant content in local languages thus increasing the knowledge of farmers about the transition period. Despite a boom in silent revolution, still there is a gap persist between the delivering and accessing of ICT application among farmers. Thus to improve the penetration level of scientific information to grassroots level (thus becoming a "ICTs for common man"), the extension system should focus on designing a successful information and extension delivery model for strengthening livestock sector growth.

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