Effect of Computer Software on Change in Knowledge Level of Goat Owners in India

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ABSTRACT

The study deals with the effect of trilingual (Hindi, English and Bangla) computer software, entitled "Goat Health Management Information System (GHMIS)" on the gain in knowledge of the goat owners about goat health management. The study was purposively conducted in the state of West Bengal and Uttar Pradesh due to its high goat population. In all, 90 respondents were randomly selected for the study. The knowledge on overall health management was assessed through the following aspects i.e., knowledge on general symptoms of diseases, control measure of diseases, kid health management and healthcare management of goat. The study shows that the mean knowledge score for post exposure to GHMIS with respect to general symptoms of diseases was 8.51 while 3.96 during pre-exposure. The mean knowledge score for post exposure to GHMIS with respect to measure of diseases was 6.72 while 3.90 during pre-exposure. The mean knowledge score for post exposure to GHMIS with respect to kid health management was 5.21 while 3.47during pre-exposure. The mean knowledge score for post exposure to GHMIS with respect to healthcare management was 7.12 while 4.31 during pre-exposure. The Pair 't' test shows that change in knowledge level was highly significant in pre and post exposure to all the aspect of health management in goat.

Key words: *GHMIS; Goat owners; Health management; Knowledge level;*

Developing countries are experiencing various economic pressures and shortfalls, and find the costs of large research and extension services difficult to bear. Better agricultural knowledge and information systems are being sought, systems that will be technically effective, cost-effective and people-effective. The recent developments in the field of communication media and technologies can possibly provide information to farmers in an effective, efficient, instant, interactive and in a participatory manner (*Singh et al. 2003*).To make the farming communities better informed in the use of innovation, the extension worker requires suitable communication devices that can overcome the barriers of illiteracy and traditions which are prominent among the resource poor farmers and drive home the message effectively (*Hai et al. 2003*). *Tiwari et al. (2010)* argued that the livestock sector should come up with the need based, location specific and local language contents in the form of computer software's and other electronic material in regards to livestock disease control, herd management, livestock production and for marketing of livestock and livestock produce. The correlation between information, communication and economic growth are well known, making the significance of networks apparent. Electronic networking is a powerful, rapid and inexpensive way to communicate and exchange information. When networks are available, developmental changes can be sporadic (*Achimugu et al. 2009*).Hence an exclusively planned and determined effort to educate the goat owners in their local language can certainly bring about desirable changes in them. With this background, an effort was made to develop and study the effectiveness of the need based and interactive goat health management information system in terms of symbolic adoption of disease management practices among the goat owners.

METHODOLOGY

The study was purposively conducted in West Bengal (WB) and Uttar Pradesh (UP) states which were selected on the basis of high goat populated state

in the country. North 24 Parganas district from WB and Mathura district from UP were randomly selected for the study. Again, three blocks were randomly selected from the district and 15 farmers were randomly selected from each block for data collection, thus 45 farmers were selected from each state and 90 respondents form the total sample size for the study. Data were collected through structured interview schedule. Before development of the need based and interactive Goat Health Management Information System (GHMIS), an analysis of need was prioritized among 35 types of diseases and problems of goat where only twelve diseases were included in GHMIS as important diseases of goat on the basis of need for the study. The Goat Health Management Information System also consists of general symptoms of diseases, vaccination schedule and deworming schedule which was developed in three languages i.e., in English, Hindi and Bengali considering the local language of the study area for easy understanding of the information. The information system was developed in adobe flash containing script, audio, video, animation, pictures etc for easy understanding of even the illiterate goat owners. For analysis, statistical tools such percentage, mean, Pair 't' test, were used using SPSS 18 package.

RESULTS AND DISCUSSION

Change in knowledge about general symptoms of disease due to GHMIS: Table 1 shows that all the respondents had knowledge that reduced or no feed intake, no rumination etc. are one of the important symptoms of diseases due to post-exposure to GHMIS while 70 percent of the respondents had knowledge during pre-exposure. Majority (63.33%) of the respondents had knowledge that run down condition and shedding hair coat is a symptom of diseases due to post-exposure while 23.33 percent of the respondents had knowledge during pre-exposure. Rise in body temperature and increase in pulse rate are a parameter for spotting of sickness was known to 98.89 percent of the respondents due to post exposure while only 33.33 percent of the respondents had knowledge during pre-exposure. Increased and difficult breathing is a parameter for spotting of sickness was known to 88.89 percent and 50 percent of the respondents due to post-exposure and pre-exposure respectively. Emaciation and dullness is a parameter for spotting of sickness was known to 83.33 percent and 48.89 percent of the respondents due to post-exposure and pre-exposure respectively. Anaemia, pale coloration of lining of eye lids is a parameter for spotting of sickness was known to 82.22 percent and 10 percent of the respondents due to post-exposure and pre-exposure respectively. Abnormal discharge from natural orifices is a parameter for spotting of sickness was known to 83.33 percent and 47.78 percent of the respondents due to post-exposure and pre-exposure respectively. Abnormal color and consistency of faeces, diarrhea, dysentery etc. is a parameter for spotting of sickness was known to 91.11 percent of the respondents due to post-exposure while 34.44 percent of the respondents had knowledge during pre-exposure. Scratching, biting and rubbing etc. is a parameter for spotting of sickness was known to 87.78 percent and 55.56 percent of the respondents due to post-exposure and pre-exposure respectively. Lameness is a parameter for spotting of sickness was known to 72.22 percent of the respondents due to post-exposure while only 22.22 percent of the respondents had knowledge during pre-exposure.

Table 1. Distribution of the respondents according to change in knowledge about general symptoms of diseases in goat

Parameter	WB (n= 45)		UP (n= 45)		Total (N=90)	
	Pre	Post	Pre	Post	Pre	Post
Reduced or no feed intake, no rumination etc.	71.11	100	68.89	100	70.00	100
Run down condition and shedding hair coat	8.89	51.11	37.78	75.56	23.33	63.33
Rise in body temp. and increase in pulse rate	35.56	100	31.11	97.78	33.33	98.89
Increased and difficult breathing	51.11	91.11	48.89	86.67	50.00	88.89
Emaciation and dullness	55.56	84.44	42.22	82.22	48.89	83.33
Anaemia, pale coloration of lining of eye lids	11.11	88.89	8.89	75.56	10.00	82.22
Abnormal discharge from natural orifices	44.44	88.89	51.11	77.78	47.78	83.33
Abnormal color and consistency of faeces, diarrhea, dysentery etc.	37.78	91.11	31.11	91.11	34.44	91.11
Scratching, biting and rubbing	51.11	88.89	60.00	86.67	55.56	87.78
Lameness	24.44	77.78	20.00	66.67	22.22	72.22

Table 2. Distribution of the respondents according to change in knowledge on control measure of diseases

Practices	WB (n= 45)		UP (n= 45)		Total (N=90)	
	Pre	Post	Pre	Post	Pre	Post
Isolation of sick animal	55.56	91.11	24.44	62.22	40.00	76.67
Quarantine for newly purchase animals	0	31.11	0	33.33	0	32.22
Vaccination of healthy animals	100	100	44.44	100	72.22	100
Timely treatment of sick animals	100	100	100	100	100	100
Rotational grazing	0	44.44	0	66.67	0	55.56
Disinfection of shed	26.67	88.89	26.67	84.44	26.67	86.67
Use of foot bath	0	11.11	0	13.33	0	12.22
Personal hygiene	31.11	57.78	20.00	26.67	25.56	42.22
Proper disposal of litter material	57.78	80.00	57.78	91.11	57.78	85.56
Proper disposal of carcass	53.33	68.89	82.22	93.33	67.78	81.11

Change in knowledge on control measure of diseases due to GHMIS : Table 2 shows that isolation of sick animal is a practice to control diseases was known to 76.67 percent of the respondents due to post-exposure to GHMIS while 40 percent of the respondents had knowledge during pre-exposure. Quarantine for newly purchased animals was known to 32.22 percent of the respondents due to post-exposure while none of the respondents had knowledge during pre-exposure. Vaccination of healthy animals was known to 72.22 percent of the respondents during pre-exposure but cent percent of the respondents had knowledge against which diseases vaccination needs to be given due to post-exposure to GHMIS. Timely treatment of sick animals needs to be done was known to all the respondents during pre-exposure but post-exposure to GHMIS goat owners were aware of the infectious diseases when timely treatment is very essential. Disinfection of shed as a control measure of disease was known to 86.67 percent of the respondents due to post-exposure while 26.67 percent of the respondents had knowledge during pre-exposure. Use of foot bath as a control measure of disease was known to 12.22 percent of the respondents

due to post-exposure while none of the respondents had knowledge during pre-exposure. Personal hygiene as a control measure of disease was known to 42.22 percent of the respondents due to post-exposure while 25.56 percent of the respondents had knowledge during pre-exposure. Proper disposal of litter material as a control measure of disease was known to 85.56 percent of the respondents due to post-exposure while 57.78 percent of the respondents had knowledge during pre-exposure. Proper disposal of carcass as a control measure of disease was known to 81.11 percent of the respondents due to post-exposure while 67.78 percent of the respondents had knowledge during pre-exposure.

Change in knowledge on kid health management due to GHMIS: Table 3 depicts that 98.89 percent of the respondents had knowledge of cleaning mucous from mouth and nostril just after birth in newborn due to post-exposure to GHMIS while 75.56 percent of the respondents had knowledge during pre-exposure. Feeding of colostrum as early as possible was known to 96.67 percent of the respondents due to post-exposure while 66.67 percent of the respondents had knowledge during pre-exposure. Cutting of naval cord with sterilized

Table 3. Distribution of the respondents according to change in knowledge on kid health management

Practices	WB (n= 45)		UP (n= 45)		Total (N=90)	
	Pre	Post	Pre	Post	Pre	Post
Cleaning of mucous from mouth and nostril just after birth	80.00	97.78	71.11	100	75.56	98.89
Feeding of colostrum as early as possible	62.22	93.33	71.11	100	66.67	96.67
Cutting of naval cord with sterilized blade	57.78	75.56	55.56	60.00	56.67	67.78
Dipping of naval cord with antiseptic solution	51.11	57.78	37.78	51.11	44.44	54.44
Providing warmth in winter months	95.56	100	88.89	100	92.22	100
Deworming of newborn within a month	26.67	57.78	11.11	64.44	18.89	61.11
Antibiotic coverage for neonatal kid	0	42.22	0	28.89	0	35.56
Weaning at 3 months of age	0	6.67	0	13.33	0	10.00

blade was known to 67.78 percent of the respondents due to post-exposure while 56.67 percent of the respondents had knowledge during pre-exposure. Dipping of naval cord with antiseptic solution was known to 54.45 percent of the respondents due to post-exposure while 44.44 percent of the respondents had knowledge during pre-exposure. Providing warmth in winter months was known to all the respondents due to post-exposure while 92.22 percent of the respondents had knowledge during pre-exposure. Deworming of newborn within a month was known to 61.11 percent of the respondents due to post-exposure while 18.89 percent of the respondents had knowledge during pre-exposure. Antibiotic coverage for neonatal kid was known to 35.56 percent of the respondents due to post-exposure while none of the respondents had knowledge during pre-exposure. Weaning at 3 months of age was known to 10 percent of the respondents due to post-exposure while none of the respondents had knowledge during pre-exposure.

Change in knowledge on healthcare management due to GHMIS: Table 4 depicts that 83.33 percent of the respondents had knowledge of cleaning and disinfection of shed at least once in a month due to post-exposure to GHMIS while 42.22 percent of the respondents had knowledge during pre-exposure. Avoiding overcrowding by providing adequate floor space for each mature goat was known to 96.67 percent of the respondents due to post-exposure while 66.67 percent of the respondents had knowledge during pre-exposure. Adequate and proper ventilation to keep the shed clean and dry was known to 70 percent of the respondents due to post-exposure while 53.33 percent of the respondents had knowledge during pre-exposure. Keeping the feed and water trough clean was known to 77.78 percent of the respondents due to post-exposure

while 66.67 percent of the respondents had knowledge during pre-exposure. Deworming of goat at least four times a year was known to 86.67 percent of the respondents due to post-exposure while 20 percent of the respondents had knowledge during pre-exposure. No vaccination before 3 months of age and during first 2-3 months of pregnancy was known to 65.56 percent of the respondents due to post-exposure while 17.78 percent of the respondents had knowledge during pre-exposure. Trimming of hoof at least twice a year was known to 57.78 percent of the respondents due to post-exposure while 13.33 per cent of the respondents had knowledge during pre-exposure. Immediate care of sick animals was known to all the respondents both during pre-exposure and post-exposure but post exposure to GHMIS goat owners had knowledge against which diseases there was a need for immediate care. To consult veterinary doctors immediately was known to all the respondents due to post-exposure while 87.78 percent of the respondents had knowledge during pre-exposure.

Change in knowledge level on general symptoms of disease in goat due to GHMIS: Table 5 depicts that the pre-exposure mean knowledge score with respect to general symptoms of disease was 3.96 and for post-exposure to GHMIS was 8.51. The mean score of difference was found to be 4.55. The 't' value was 26.306 which was found to be highly significant. This implied that the knowledge gained by the respondents with respect to general symptoms of diseases in goat was substantial because of the exposure to the developed GHMIS and it has also been supported by the significance of the 't' value. Sasikala (2013) also reported that drastic change in the level of knowledge was observed after exposure to the Multimedia module for integrated farming system among the farmers,

Table 4 Distribution of the respondents according to change in knowledge on healthcare management

Practices	WB (n= 45)		UP (n= 45)		Total (N=90)	
	Pre	Post	Pre	Post	Pre	Post
Cleaning and disinfection of shed	28.89	82.22	55.56	84.44	42.22	83.33
Avoiding overcrowd	2.22	48.89	64.44	93.33	33.33	71.11
Adequate and proper ventilation	51.11	66.67	55.56	73.33	53.33	70.00
Keeping the feed and water trough clean	57.78	75.56	68.89	80.00	63.33	77.78
Deworming	17.78	91.11	22.22	82.22	20.00	86.67
Vaccination	26.67	77.78	8.89	53.33	17.78	65.56
Trimming of hoof	26.67	68.89	0	46.67	13.33	57.78
Immediate care of sick animals	100	100	100	100	100	100
Consult veterinary doctors immediately	75.56	100	100	100	87.78	100

Veterinary Assistant Surgeon and Subject Matter Specialist. Table 5 further shows that majority (84.44%) of the goat owners during pre-exposure had medium level of knowledge while in case of post-exposure, majority (88.89%) of the respondents had high level of knowledge regarding general symptoms of diseases. It's also need to be mentioned that none was found with low level of knowledge regarding general symptoms of diseases in goat after post exposure to GHMIS.

Change in knowledge level on control measure of diseases due to GHMIS: Table 5 depicts that that the mean knowledge score for the respondents during pre-exposure was 3.90 and post-exposure to GHMIS was 6.72. The mean score of difference was found to be 2.82. The 't' value was 15.064 which was found to be highly significant. This implied that the knowledge gained by the respondents with regard to control measure of diseases in goat was substantial because of the exposure to the developed GHMIS and it has also been supported by the

significance of the 't' value. Table 5 further depicts that majority (47.78%) of the respondents during pre-exposure had low level of knowledge while in case of post-exposure majority (54.44%) of the respondents had high level of knowledge regarding control measure of diseases.

Change in knowledge level on kid health management due to GHMIS: Table 5 depicts that the pre and post-exposure mean knowledge score for kid health management was 3.47 and 5.21 respectively. The mean score of difference was found to be 1.74. The 't' value was 12.300 which was found to be highly significant. This implied that the knowledge gained by the respondents with regard to kid health management practices was substantial because of the exposure to the developed goat health management information system and it has also been supported by the significance of the 't' value. The findings were in accordance with the results obtained by Kadian and *Gupta (2006)* who stated that as compared to "lecture

Table 5. Change in knowledge level due to GHMIS

Level of knowledge		WB (n= 45)		UP(n= 45)		Total (N=90)	
		Pre	Post	Pre	Post	Pre	Post
General symptoms of diseases in goat	Low (0-3)	23(51.11)	0	18(40.00)	0	41(45.56)	0
	Medium (4-6)	16(35.56)	4(8.89)	22(48.89)	6(13.33)	38(84.44)	10(11.11)
	High (7-10)	6(13.33)	41(91.11)	5(11.11)	39(86.67)	11(24.44)	80(88.89)
	Mean ± SD	3.91±1.66	8.62±1.15	4.00±1.52	8.40±1.36	3.96±1.59	8.51±1.26
	Mean difference	4.71		4.40		4.55	
	't' value	17.894**		19.501**		26.306**	
Control Measure of diseases	Low (0-3)	18(40)	1(2.22)	25(55.56)	0	43(47.78)	1(1.11)
	Medium (4-6)	21(46.67)	18(40)	18(40.00)	22(48.89)	39(43.33)	40(44.44)
	High (7-10)	6(13.33)	26(57.78)	2(4.44)	23(51.11)	8(8.89)	49(54.44)
	Mean ± SD	4.24±1.75	6.73±1.51	3.56±1.85	6.71±1.14	3.90±1.82	6.72±1.33
	Mean difference	2.49		3.15		2.82	
	't' value	9.896**		11.624**		15.064**	
Kid health management	Low (0-2)	12(26.67)	0	16(35.56)	1(2.22)	28(31.11)	1(1.11)
	Medium (3-5)	24(53.33)	25(55.56)	27(60.00)	30(66.67)	51(56.67)	55(61.11)
	High (6-8)	9(20.00)	20(44.44)	2(4.44)	14(31.11)	11(12.22)	34(37.78)
	Mean ± SD	3.73±1.75	5.31±0.95	3.20±1.46	5.11±1.19	3.47±1.62	5.21±1.08
	Mean difference	1.58		1.91		1.74	
	't' value	8.002**		9.411**		12.300**	
Healthcare management	Low (0-3)	19(42.22)	00	11(24.44)	00	30(33.33)	0
	Medium (4-6)	24(53.33)	33(73.33)	30(66.67)	33(73.33)	54(60.00)	66(73.33)
	High (7-10)	2(4.44)	12(26.67)	4(8.89)	12(26.67)	6(6.67)	24(26.67)
	Mean ± SD	3.87±1.70	7.11±1.28	4.76±1.35	7.13±1.12	4.31±1.59	7.12±1.20
	Mean difference	3.24		2.37		2.81	
	't' value	14.002**		11.242**		17.288**	

Figures in parenthesis indicate percentage;**p<0.01

only", "audio only" and "literature only" educational methods, the Video Compact Disc (VCD) found to be most effective for imparting knowledge related to dairy calf management practices. Table 5 also depicts that majority of the respondents had medium level of knowledge both during pre-exposure (56.67%) and post-exposure (61.11%) regarding kid health management but percent of respondent with low level of knowledge decreases and high level of knowledge increases during post exposure to GHMIS.

Change in knowledge level on healthcare management due to GHMIS: Table 5 shows that the pre-exposure and post exposure mean knowledge score for healthcare management was 4.31 and 7.12 respectively. The mean score of difference was found to be 2.81. The 't' value was 17.288 which was found to be highly significant. This implied that the knowledge gained by the respondents with regard to goat healthcare management practices was substantial because of the exposure to the developed goat health management information system and it has also been supported by the significance of the 't' value. *Vaidya and Manivanan (2010)* reported that the knowledge gained by the respondents with regard to dairy health management practices was substantial because of the exposure to the developed interactive video-DVD. Table 5 depicts that majority of the respondents had medium

level of knowledge both during pre-exposure (60%) and post-exposure (73.33%) regarding healthcare management. Also 33.33 percent of the respondent had low level of knowledge during pre-exposure while none was found with low level of knowledge post-exposure to GHMIS. Only 6.67 percent of the respondent had high level of knowledge during pre-exposure but it increased to 26.67 percent during post-exposure.

CONCLUSION

The study shows that need based and interactive goat health management information system software which was developed in local languages had significantly increased knowledge among goat owners. So, it is highly recommended to develop such need based and interactive disease management information software in local languages which can enhance the knowledge of livestock farmers. It is also suggested to the policy makers to take proper initiative to make arrangement for using the software packages at the doorstep of the farmers by providing ICT inputs such as computer with internet connectivity. This initiative will enhance the information dissemination through these communication channels and thereby resulting into the economic growth of the farmers and nation as a whole.

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