

A Study on Perceptions of Milk Producers in Andhra Pradesh about the Concept of Eco-Health Practices in Dairy Farming

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Abstract

The present study was conducted in three different regions of Andhra Pradesh state and one district from each region was selected purposively. 120 milk producers were randomly selected i.e. 20 from rural and 20 from urban area of each district comprising 40 from each district with the help of interview schedule. The independent variables like age, educational qualification, family type, main occupation, land holding, experience in dairy farming, mass media exposure, extension contact, information seeking behavior, economic orientation, scientific orientation and management orientation were significantly associated with perception level of milk producers at $P < 0.01$. The present study highlights the perception level of milk producers about Eco-Health practices in dairy farming and the importance of personal, socio-economic, communication and psychological profile for changing the perceptions and for executing the any programmes related to dairy sector for environmental safety, public health and product safety.

Keywords: Perception; Eco-Health Practices; Milk Producers; Dairy Sector; Andhra Pradesh.

Introduction

India has been the largest producer of milk and milk products from last few decades. Majority of the Indian dairy sector was occupied by marginal and small farmers where quality is a big concern because most of the milk produced and distributed through informal chains. For gaining more profits majority of the farmers were following unethical practices and using misapplications which are not safe for public and environment (Ozturket al. 2019). Although a great extent of trainings are being carried out in the state departments on dairy production system, but the sad part is that farmer are interested in producing more milk rather than clean milk. One Health collaborative effort involving experts from a wide range of disciplines working for reducing the problems. Positive perception on Eco-Health practices in dairy farm assist milk producers to

increase their awareness and make them to explore more for increasing returns by following simple management practices, create coordination with stakeholders involved in dairy sector and make them aware of the public health risks associated with adulteration. So the study was planned to document the perception levels of rural and urban milk producers from three districts of Andhra Pradesh state towards Eco-Health practices in dairy sector with respect to environmental aspects, human aspects and product safety.

Methodology

The present study was conducted in three regions of Andhra Pradesh state. One district from each region that is Chittoor district from Rayalaseema, Krishna district from Coastal and Vishakhapatnam district from North coastal region were selected.



Table 1: Perception of milk producers about Eco-Health practices with respect to environmental aspects.

Perception about	Districts																	
	Visakhapatnam						Krishna						Chittoor					
	Rural			Urban			Rural			Urban			Rural			Urban		
	A	UD	D	A	UD	D	A	UD	D	A	UD	D	A	UD	D	A	UD	D
Do you agree that climatic conditions are changing drastically	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)
Production may change due to climate change	6(30)	10(50)	4(20)	9(45)	8(40)	3(15)	9(45)	9(45)	2(10)	10(50)	9(45)	1(5)	9(45)	11(55)	0(0)	11(55)	9(45)	0(0)
Human activities are responsible for climate change	12(60)	8(40)	0(0)	13(65)	7(35)	0(0)	15(75)	5(25)	0(0)	16(80)	4(20)	0(0)	14(70)	6(30)	0(0)	17(85)	3(15)	0(0)
If humans follow the same undesirable activities will bring harm to environment	13(65)	7(35)	0(0)	14(70)	6(30)	0(0)	15(75)	5(25)	0(0)	16(80)	4(45)	0(0)	15(75)	5(25)	0(0)	17(85)	3(15)	0(0)
Environmental temperatures, pollution, deterioration of soil and water are the major problems for dairy farming in Andhra Pradesh	6(30)	10(50)	4(20)	6(30)	14(70)	0(0)	6(30)	14(70)	0(0)	9(45)	11(55)	0(0)	7(35)	13(65)	0(0)	11(55)	9(45)	0(0)
Is it crucial to control environmental pollution from dairy sector	12(60)	8(40)	0(0)	10(50)	10(50)	0(0)	12(60)	8(40)	0(0)	15(75)	5(25)	0(0)	13(65)	7(35)	0(0)	16(80)	4(20)	0(0)
Do you agree that farm input cost may increase due to environmental pollution, rising temperatures, soil and water deterioration	8(40)	12(60)	0(0)	9(45)	11(55)	0(0)	10(50)	10(50)	0(0)	11(55)	9(45)	0(0)	13(65)	7(35)	0(0)	15(75)	5(25)	0(0)
Controlling the changes in environment, soil and water can increase profitability in dairy farm	6(30)	14(70)	0(0)	7(35)	13(65)	0(0)	8(40)	12(60)	0(0)	11(55)	9(45)	0(0)	10(50)	10(50)	0(0)	14(70)	6(30)	0(0)
Methane is one of the responsible gas for increasing environmental temperatures	2(10)	8(40)	10(50)	3(15)	8(40)	9(45)	6(30)	9(45)	5(25)	6(30)	10(50)	4(20)	5(25)	8(40)	7(35)	8(40)	9(45)	3(15)
Treating dairy effluents before releasing into the environment is an important step in dairy farm	0(0)	16(80)	4(20)	1(5)	16(80)	3(15)	2(10)	16(80)	2(10)	4(20)	16(80)	0(0)	3(15)	17(85)	0(0)	5(25)	15(75)	0(0)

Poor microbiological quality of drinking water may adversely affect health and productivity of animals.	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)
Proper dung management can reduce vectors	5(25)	15(75)	0(0)	11(55)	9(45)	0(0)	9(45)	11(55)	0(0)	14(70)	6(30)	0(0)	12(60)	8(40)	0(0)	15(75)	5(25)	0(0)
Dung heaps should be covered with plastic sheets or other fly-proof material	0(0)	6(30)	14(70)	2(10)	6(30)	12(60)	2(10)	4(20)	14(70)	3(15)	6(30)	11(55)	2(10)	7(35)	11(55)	6(30)	9(45)	5(25)
Poor handling of manure and fertilizers can degrade local water bodies	0(0)	4(20)	16(80)	4(20)	8(40)	8(40)	3(15)	6(30)	11(55)	8(40)	9(45)	3(15)	5(25)	8(40)	7(35)	8(40)	12(60)	0(0)
Humans coexist in a complex, interdependent relationship with animals and environments	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)
There is a relationship between environmental pollution, food safety, and health problems.	17(85)	3(15)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)
Irregular use of antibiotics in animal husbandry partly imparted the antimicrobial resistance in human beings.	3(15)	7(35)	10(50)	4(20)	7(35)	9(45)	3(15)	15(75)	2(10)	6(30)	14(70)	0(0)	4(20)	11(55)	5(25)	6(30)	14(70)	0(0)
Continuous changes in environment may lead to emergence of new diseases	6(30)	14(70)	-	13(65)	7(35)	0(0)	12(60)	8(40)	-	15(75)	5(25)	0(0)	13(65)	7(35)	0(0)	20(100)	0(0)	0(0)
There is a dire need for training on eco-health practices	18(90)	2(10)	0(0)	19(95)	1(5)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)

Figure in parenthesis indicate percentage

From every district 20 urban and 20 rural milk producers' areas were selected randomly, complaining 120 from three districts. Rural and Urban milk producers were personally interviewed with the help interview schedule. The milk producers were categorized based on the value obtained by dividing the maximum possible score with three since they were grouped separately into three categories i.e., low, medium and high level of awareness. The range for low, medium and high

perception levels for Eco-Health practices with respect to environmental aspects was <13, 13 to 26 and more than 26 respectively, for human aspects it was <8, 8 to 16 and >16 and for product safety it was <6, 6 to 12 and >12 respectively.

The perception levels was measured on three point continuum i. e. agree (score 2), undecided (score 1) and disagree (score 0) for positive statements and reverse for negative statements.

Table 2: Perception of Milk Producers about Eco-Health Practices with Respect to Human Aspects.

Perception about	Districts																	
	Visakhapatnam						Krishna						Chittoor					
	Rural			Urban			Rural			Urban			Rural			Urban		
	A	UD	D	A	UD	D	A	UD	D	A	UD	D	A	UD	D	A	UD	D
Regular testing of milk producer against zoonotic diseases is one of the important management practice in farm	6(30)	3(15)	11(55)	7(35)	5(25)	8(40)	6(30)	8(40)	6(30)	9(45)	8(40)	3(15)	7(35)	7(35)	6(30)	11(55)	5(25)	4(20)
It is necessary to test a milker for diseases	6(30)	3(15)	11(55)	7(35)	5(25)	8(40)	6(30)	5(25)	9(45)	8(40)	8(40)	4(20)	6(30)	7(35)	7(35)	10(50)	6(30)	4(20)
Sick milker can milk the animals	14(70)	1(5)	5(25)	12(60)	2(10)	6(30)	10(50)	4(20)	6(30)	5(25)	7(35)	8(40)	8(40)	7(35)	5(25)	4(20)	7(35)	9(45)
Washing hands, trimming nails, covering head and cleanliness during milking is essential	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	19(95)	0(0)	1(5)	20(100)	0(0)	0(0)
Do you agree that knuckling method of milking is a best practice	12(60)	0(0)	8(40)	6(30)	5(25)	9(45)	5(25)	8(40)	7(35)	4(20)	7(35)	9(45)	6(30)	7(35)	7(35)	3(15)	6(30)	11(55)
Dairy animals should be inspected every day in addition to observation at milk.	4(20)	4(20)	12(60)	5(25)	7(35)	8(40)	8(40)	6(30)	6(30)	8(40)	7(35)	5(25)	7(35)	8(40)	5(25)	10(50)	5(25)	5(25)
Using milk from diseased animal is not a bad practice	14(70)	0(0)	6(30)	11(55)	0(0)	9(45)	6(30)	6(30)	8(40)	4(20)	6(30)	10(50)	6(30)	5(25)	9(45)	4(20)	4(20)	12(60)
Is it the right practice to sell or consume the milk of an animal immediately after antibiotic treatment	10(50)	8(40)	2(10)	8(40)	9(45)	3(15)	14(70)	4(20)	2(10)	7(35)	8(40)	5(25)	12(60)	4(20)	4(20)	7(35)	6(30)	7(35)
Antibiotics have a permanent effect on milk production	5(25)	13(65)	2(10)	4(20)	12(60)	4(20)	5(25)	9(45)	6(30)	4(20)	8(40)	8(40)	5(25)	9(45)	6(30)	4(20)	5(25)	11(55)
Antibiotics have no side effects if used irregularly	0(0)	17(85)	3(15)	0(0)	16(80)	4(20)	0(0)	14(70)	6(30)	0(0)	11(55)	9(45)	0(0)	13(65)	7(35)	0(0)	9(45)	11(55)

Immediately stopping the course of antibiotics when the disease subsides is a wrong practice	2(10)	4(20)	14(70)	4(20)	2(10)	14(70)	6(30)	6(30)	8(40)	9(45)	5(25)	8(40)	7(35)	6(30)	7(35)	11(55)	5(25)	4(20)
Vaccine can permanently reduce milk production.	10(50)	4(20)	6(30)	8(40)	5(25)	7(35)	5(25)	9(45)	6(30)	5(25)	8(40)	9(45)	6(30)	7(35)	7(35)	4(20)	5(25)	11(55)

Figure in parenthesis indicate percentage.

Table 3: Perception of milk producers about Eco-Health practices with respect to product safety.

Perception about	Districts																	
	Visakhapatnam						Krishna						Chittoor					
	Rural			Urban			Rural			Urban			Rural			Urban		
	A	UD	D	A	UD	D	A	UD	D	A	UD	D	A	UD	D	A	UD	D
Following clean milk production practices can increase production and farm economy	10(50)	10(50)	0(0)	12(60)	8(40)	0(0)	15(75)	5(25)	0(0)	16(80)	4(20)	0(0)	15(75)	5(25)	0(0)	18(90)	2(10)	0(0)
Regular checking of containers cleanliness is essential for maintaining milk quality	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)
Dairy animals cannot not be milked in same shed where they are housed normally	0(0)	10(50)	10(50)	2(10)	7(35)	11(55)	5(25)	6(30)	9(45)	7(35)	6(30)	7(35)	6(30)	7(35)	7(35)	8(40)	7(35)	5(25)
It is necessary to provide separate milking area for milking animals	0(0)	5(25)	15(75)	2(10)	7(35)	11(55)	5(25)	6(30)	9(45)	7(35)	6(30)	7(35)	6(30)	6(30)	8(40)	8(40)	7(35)	5(25)
The milking place should be clean, dry and protected from flies	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)
The milking area should be cleaned after every milking	0(0)	4(20)	16(80)	2(5)	7(35)	11(55)	4(20)	5(25)	11(55)	7(35)	5(25)	8(40)	6(30)	6(30)	8(40)	10(50)	7(35)	3(15)
Pre-dipping of teats with sanitizing solution for at least 30 seconds can increase milk quality	0(0)	20(100)	0(0)	3(15)	17(85)	0(0)	4(20)	16(80)	0(0)	6(30)	14(70)	0(0)	4(20)	16(80)	0(0)	8(40)	12(60)	0(0)
Milk adulteration is a bad practice	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)	20(100)	0(0)	0(0)
Dairy products should always be stored in hygiene and cool temperatures	6(30)	14(70)	0(0)	9(45)	11(55)	0(0)	12(60)	8(40)	0(0)	15(75)	5(25)	0(0)	14(70)	6(30)	0(0)	17(85)	3(15)	0(0)

Figure in parenthesis indicate percentage

Results and Discussion

The collected data was tabulated and analysed with the help of SPSS version 23.

Table 1, 2 and 3 indicate the perception of milk producers on Eco-Health practise with respect to environmental aspects, human aspects and product

safety respectively. From Krishna and Chittoor district majority of the milk producers had greater perception levels compared to Visakhapatnam district but still not up to the mark. Milk producers had greater perception levels for environmental aspects compared to animal aspects and product safety. Majority of the people still following the traditional practise which are undesirable to present situations. This may be due to lack of participatory training programmes that are mainly focusing on general management practices, lack of published information on risks related to unhygienic and false practices and unhygienic farm condition. So there is a need for regular and consistent extension advisory services delivery for understanding the interaction between animals-human-environment and there is a need to raise awareness regarding risks related to this interaction. The public health and animal health officials should work together for bringing the awareness and changing the perceptions of the milk producers. The results are in agreement

with the results of Gupta et al.(2020), Singh. (2019) Ozturk et al.(2019), Lindahl et al.(2018), Rati and Shehrawat (2015) and Andrew et al.(2012). It is clear from Table 4 that majority of Visakhapatnam rural milk producers had medium perception levels regarding environmental aspects (65%), low perception levels regarding human aspects (60%) and medium perception levels regarding product safety (75%). Majority of Visakhapatnam urban milk producers had high perception levels score regarding environmental aspects (60%), low perception levels regarding human aspects (40%) and medium perception levels regarding product safety (60%). Whereas majority of the Krishna (75% & 80%) and Chittoor (90% & 75%) district milk producers from rural and urban area had high perception levels with respect to environmental aspects. Majority of the urban milk producers of Krishna (45% & 60%) and Chittoor district (60% & 75%) had high perception levels regarding Eco-Health practices with respect to human aspects

Table 4: Distribution of milk producers according to their perception levels.

Perception with Respect to	Category	Districts					
		Visakhapatnam		Krishna		Chittoor	
		Rural area (n=20)	Urban area (n=20)	Rural area (n=20)	Urban area (n=20)	Rural area (n=20)	Urban area (n=20)
Environmental aspects	Low (<13)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
	Medium (13-26)	13(65)	8(40)	5(25)	4(20)	2(10)	5(25)
	High (>26)	7(35)	12(60)	15(75)	16(80)	18(90)	15(75)
Human aspects	Low (<8)	12(60)	8(40)	5(25)	4(20)	2(10)	5(25)
	Medium (8-16)	2(10)	5(25)	9(45)	7(35)	13(65)	3(15)
	High (>16)	6(30)	7(35)	6(30)	9(45)	5(25)	12(60)
Product safety	Low (<6)	0(0)	0(0)	0(0)	0(0)	0(0)	0(0)
	Medium (6-12)	15(75)	12(60)	13(65)	8(40)	10(50)	5(25)
	High (>12)	5(25)	8(40)	7(35)	12(60)	10(50)	15(75)

Figure in parenthesis indicate percentage

and product safety and rural area milk producers comes under low level category. So awareness of milk producers on Eco-Health practices can change the perspective and milk producers consider the threats due to bad managemental practices, unhygienic milk production and feel responsible for that.

From Table 5 it is clear that age, educational qualification, family type, main occupation, land holding, experience in dairy farming, mass media exposure, extension contact, information seeking behavior, economic orientation, scientific

orientation and management orientation were significantly associated with perception level of milk producers at $P < 0.01$. Two independent variables namely gender and herd size were significantly associated at $P < 0.05$.

The variable age was significantly associated with milk producer's perception towards eco-health practices. It indicates that as age decreases the perception level of milk producers increases. This may be due to the fact that middle and young age milk producers had high level of education compared to old age group. There is a significant

association between milk producer's perception and educational qualification towards Eco-Health practices. Education is must for everything where dairy farming is not an excuse.

Table 5: Association between milk producer's perception and their independent variables (n=120)

Independent Variable	Chi-Square value (X2)
Age	49.772**
Gender	7.278*
Educational qualification	80.157**
Family Size	4.253NS
Family Type	12.610**
Main Occupation	17.840**
Land Holding	33.448**
Herd Size	7.288*
Experience in Dairy Farming	15.731**
Gross Annual Income	2.379NS
Dairy Farm Management	0.066NS
Mass Media Exposure	75.616**
Extension Contact	44.178**
Information Seeking Behavior	71.449**
Economic Orientation	61.208**
Scientific Orientation	56.180**
Management Orientation	71.074**

NS-non significant;*-Significant at 5%;**-Significant at 1%

This may be reason that higher the education levels higher the milk producer's perception levels. Family type was significantly associated with milk producer's perception towards Eco-Health practices. This tendency may be attributed to the fact that the majority of milk producers come from nuclear families, where each member has the ability to make own decisions and have fewer members in the family, facilitates higher allocation of money on dairy farm leading them to explore more technologies and change the perceptions in positive way.

Main occupation was significantly associated with milk producer's perception towards Eco-Health practices. The probable reason may be due to the fact that the constant engagement in dairy farming by milk producers may lead to positive perceptions regarding environmental aspects, human aspects and product safety. Land holding was significantly associated with the milk producer's perception regarding Eco-Health practices. This may be due to the fact that greater land holding provide greater incentive in terms of adoption and applicability of technologies which can change the perceptions of milk producers in positive way. Experience in dairy farming was significantly associated with the milk

producer's perception on Eco-Health practices. More the experience, the higher the perception levels. This may be due to the fact that having a lot of experience in dairy sector affects the milk producer's perception since they constantly expose to different circumstances.

Mass media exposure was significantly associated with the milk producer's perception regarding Eco-Health practices. This indicate that milk producers with higher mass media exposure had higher perceptions towards Eco-Health practices. Extension contact was significantly associated with the milk producer's perception towards Eco-Health practices. This indicate that milk producers with greater extension contact had higher perception levels. This could be attributed to the fact that frequent contact with extension officials has increased the information sources regarding dairy farming which may lead to have higher perception levels regarding Eco-Health practices. Information seeking behavior was significantly associated with the perception level of milk producers towards Eco-Health practices.

Milk producers with higher information seeking behavior had higher perception levels regarding Eco-Health practices. There was a significant association between the milk producer's perception and economic orientation. The possible reason could be that, farmers who wants to improve the economic status will try to gain more information regarding preventive measure for producing safe milk. This may lead them to have greater perception levels on Eco-Health practices. Scientific orientation was significantly associated with the milk producer's perception levels with respect to Eco-Health practices.

The probable reason may be that the milk producer's perception on Eco-Health practices were mostly depend on education levels and communication profile which motivate the farmers to know more about Eco-Health practices. Management orientation was significantly associated with milk producer's perception towards Eco-Health practices. This trend may be due to the fact that farmers with more management orientation which is comprises of planning and production management are more likely to have greater perception levels because management orientation in turn decided by factors like economic orientation and scientific orientation.

Conclusion

The findings of the study concluded that the

perception level of milk producers towards Eco-Health practices with respect to Environmental aspects, human aspects and product safety was low in rural areas of Visakhapatnam, Krishna and Chittoor districts compared to urban areas. And even in urban areas it was not up to the mark. This may be due to lack of exposure to different practices which are environmentally safe and had less public health risks. So there is a need that experts from different fields should come together to provide information's and demonstrations for better understanding, to bring the change in the perception levels of milk producers regarding the concepts of Eco-Health and its importance in dairy sector by considering the socio-economic characters, communication profile and psychological profiles.

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