

Assessment of working problems and designing of protective clothing for female dairy workers

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Abstract

Protective textile is a part of technical textiles which are used in all the textile based products to perform some special functions rather than aesthetic or decorative purposes. These protective clothing are used by the huge number of agriculture and dairy workers to protect themselves from various ill effects of farming and dairy work. Wearing the proper clothes at work place can help to prevent various injuries and skin infections to the body. Hence, the descriptive as well as experimental study was conducted on the 25 female dairy workers of tarai region of District Nainital to know about the occupational problems and to design the protective clothing for them on the basis of their needs. The survey method was used by the researcher to collect the information from dairy workers. The results obtained from the study revealed that the negative correlation (-0.37) was found between health problems and activities of female dairy workers. It means that activities of dairy workers adversely affect workers health. Therefore, the researcher designed kameez apron and cap for female workers on the basis of their necessities using polyester taffeta fabric. These protective clothing's price was between the ₹100-500 which can be afford maximum number of dairy female workers.

Keywords: dairy workers, dairy farm, occupational health problems, protective clothing

1. Introduction

The dairy farming is one of the class of agriculture for long-term production of milk. According to FAO (2016) [1], India is the world's largest milk producer and the second largest milk products producer in the world. Dairy farming provides an excellent opportunity for self employment of unemployed youths. It can be also an important source of income generation to small/marginal farmers and agricultural labourers. It is true that agriculture is mostly seasonal; there is only possibility of finding employment throughout the year for many people through dairy farming. The male as well as female dairy workers performed various works in dairy. They are engaged in doing various kinds of work in dairy farm, which includes from collecting fodder and bedding material from the farm areas, stacking of hay, feeding and looking after the animals, cleaning the animal's shed, milking the animals, processing of milk and milk products (Singh, 2000) [3].

Direct contact with animals' body fluids such as blood, tissue, urine, semen and feces contain pathogens including bacteria, viruses and some parasites can cause the problems in humans (ILO, 2000) [2]. Dairy workers are also exposed to outdoor environmental conditions, high levels of solar radiation, and repeated contact with irritant chemicals and plants. These factors put dairy workers at high risk for skin irritation and disease. Outdoor work adds additional risk of stings and bites from insects and other animals, with risk of allergic reactions. It is essential that female dairy workers keep good personal hygiene and wearing protective clothing, which can minimize the risk of some animal-borne diseases infecting to them.

Therefore, the current study was designed to explore the protective clothing for female dairy workers. It is important to assess female problems and design the protective clothing for

them because females are much aware about their health as compared to males. Hence, keeping these points in mind the present investigation was carried out with the following objectives

1. To collect the general information about the female dairy workers and their working problems.
2. To collect the information related to clothing requirements of female dairy workers.
3. To design appropriate protective clothing for female dairy workers.

2. Materials and Methods

The study was descriptive and experimental in nature. The sample for this study was selected randomly i.e. 25 female respondents who work in dairy farm. The locale of the study was village Develchour of tehsile Haldwani, Nainital district of Uttarakhand state; and it was selected purposively to conduct the study. The personal interview schedule was prepared and used to collect the information about the problems and clothing practices of female dairy workers. Polyester taffeta fabric with cotton lining fabric was selected on the basis of their need and availability in market. Laboratory equipments like spray tester and pick glass were used to identify the water resistance quality and fabric count of the polyester taffeta fabric. The data was tabulated and analyzed by using appropriate statistical tools such as percentage, frequency and correlation.

3. Results and Discussion

General information of workers who worked in dairy farm

The personal information of the workers including their age, family type, family income and education qualification which

has been presented in Table 1.

Table 1: Distribution of workers according to general information (N= 25)

SL. No.	Parameters	Variables	Female workers	
			Frequency	Percentage
1.	Age (Years)	16-30	10	40
		31- 50	14	56
		Above 50	1	4
3.	Family type	Nuclear	4	16
		Joint	21	84
4.	Family income (≠/ month)	Below 7500	5	20
		7500-17000	18	72
		17001-85000	2	8
		Above 85000	0	0
5.	Education qualification	Illiterate	8	32
		Primary	2	8
		Intermediate	8	32
		Graduate	2	8
		Postgraduate	5	20

It was found from the table 1 that most of the female workers aged between 31-50 years and they belonged to joint family. The female workers’ earning was very less *i.e.* ≠ 7500-17000 because of their illiteracy or low level of education.

Specific information of workers who worked in dairy farm
 Tables 2 to Table 6 are presenting the results of specific information of dairy workers regarding dairy work and their problems.

Table 2: Distribution of female workers based on type of specific information (N=25)

SL. No.	Specific information	Variables	Female workers	
			Frequency	Percentage
1.	Type of works*	Provide hay to animals	4	16
		Milk collection/processing	6	24
		Cleaning the animal shed	5	20
		All kinds of work	17	68
2.	Maximum difficult work*	Cleaning of animals shed	11	44
		To elimination of harmful insects and ticks	7	28
		Mixing and providing of silage	3	12
		Processing of milk	9	36
3.	Health problems*	Allergies	1	4
		Infections	4	16
		Muscular-skeleton problems	12	48
		Headache	5	20
		Fatigue	15	60
		All the above	4	16

*Multiple responses

Table 2 shows that more number of female workers *i.e.* 68 percent performed all kinds of work in the dairy such as collecting fodder and bedding material from the land areas, feeding and looking after the animals, cleaning the animal shed, milking animals, as well as processing and marketing of milk. Forty four percent respondents faced the problems while cleaning animal sheds because this task consumes maximum

energy of them. The female workers also faced health problems like fatigue (60 percent) and muscular-skeleton problems (48 percent) while they performed dairy work followed by headache (20 percent) and infections (16 percent). Pinzke *et al.* (2001) [4] also found similar type of health problems among worker while performing dairy work.

Table 3: Distribution of workers according to type of garments and additional accessories used by female dairy workers (N=25)

SL. No.	Parameters	Variables	Female workers	
			Frequency	Percentage
1.	Garments wore at the time of work*	Salwar kameez	17	68
		Sarees	10	40
		Maxi/ gown	2	8
2.	Additional clothing/ accessories used at the time of work*	Waterproofing boots	2	8
		Scarf/ Stole/ Dupatta	22	88
		Head cover	10	40

*Multiple responses

It reveals in the Table 3 that 68 percent of female respondents wore salwar kameez at the time of work followed by sari and maxi *i.e.* 40 percent and 8 percent, respectively. It also revealed that all the workers were using some additional

clothing/ accessories at the time of work. The workers mostly used stole or duppata (88 percent) at working place followed by head cover and boots *i.e.* 40 percent and 8 percent, respectively.

Table 4: Distribution of female workers according to body parts covered by them (N=25)

SL. No.	Parameters	Variables	Female workers	
			Frequency	Percentage
1.	Protection of body parts most often taken*	Head only	22	88
		Arms only	1	4
		Legs only	6	24
		Torso	2	8
		Face	8	32
2.	Season when protection was taken*	In summers only	2	8
		In winter only	3	12
		Throughout the year	20	80

*Multiple responses

It was found from the Table 4 that most of the female respondents were covered their head followed by legs, face, torso and arms with the help of accessories like duppata, boots

and gloves. The female respondents were very much conscious about themselves; hence, they use clothing and accessories throughout the year (80 percent).

Table 5: Distribution of workers on the basis of fabric specifications and price range preferred for protective clothing (N=25)

Sl. No.	Fabric specifications and price range preferred by them	Frequency	Percentage
1	Colour		
i	Light	7	28
ii	Medium	2	8
iii	Dark	16	64
2	Pattern		
i	Printed	17	68
ii	Solid	8	32
3	Essential characteristic *		
i	Durable	6	24
ii	Comfortable	15	60
iii	Water resistance	14	56
iv	Wrinkle resistance	4	16
v	Easy to wash	11	44
4	Money spent for protective clothing		
i	Below ₹100	1	4
ii	₹100-500	20	80
iii	₹501-1000	4	16
iv	Above than ₹1000	0	0

* Multiple responses

It was found from the Table 5 that maximum percentage (60 percent) of female preferred the comfortable protective clothing, followed by 56 percent, 44 percent and 24 percent who preferred water resistance, easy to wash and durable clothing. Dark color and printed fabric was preferred by most of the farm workers *i.e.* 64 percent and 68 percent,

respectively for protective clothing. 80 percent of female worker can spend ₹100- 500 for purchasing of protective clothing followed by 16 percent who can afford ₹500- 1000. Among the total population 4 percent worker spend less than ₹100.

Table 6: Correlation between independent variables and dependent variables (N=25)

Sl. No.	Independent Variables	Dependent Variables	Correlation value
1.	Time spend per day in dairy work	The dairy workers health problems	0.57*
2.	Activities of dairy workers	The dairy workers health problems	-0.37*

*Significant at 5 percent level of significance

Table 6 shows the correlation and states that time spend per day by the workers in the dairy farm are positively correlated (0.57) with their health problems. It states that health of the workers was affecting with the increase in working time. It

was also found from the study that activities of dairy workers were adversely affecting their health which shown by correlation value *i.e.* -0.37. Hence, there is a need of protective clothing for dairy farm workers.

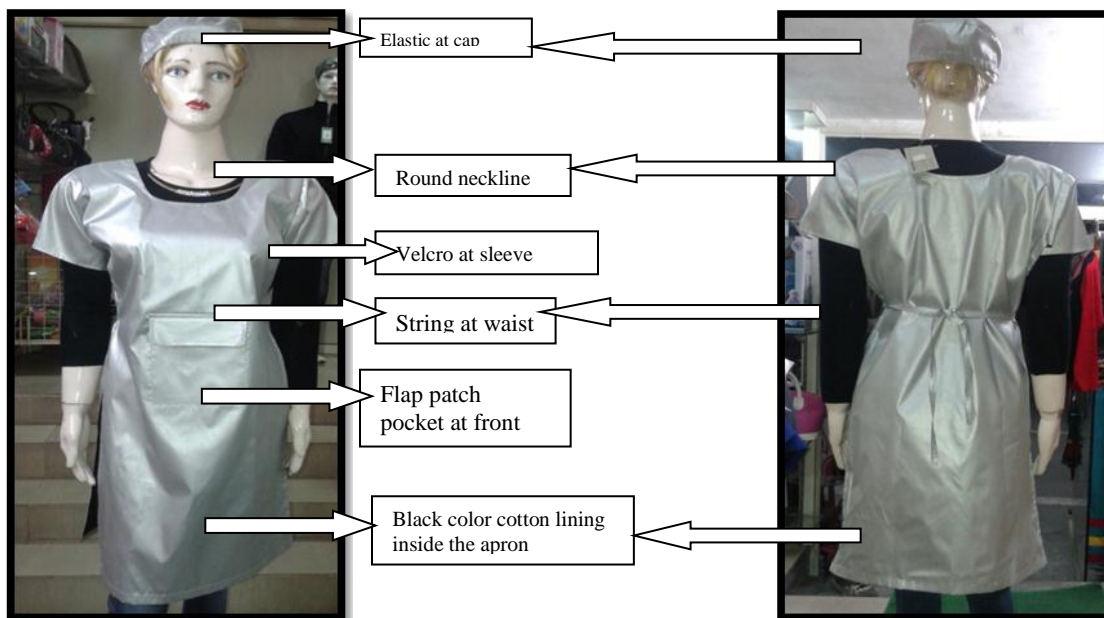


Fig 1: Front of kameez apron and cap

Fig 2: Back of kameez apron and cap

According to all the above information, the researcher designed the kameez apron and cap for the female workers. Light color water resistant fabric was purchased from local market. The polyester taffeta silver coated fabric was used by the researcher for construction of protective clothing, which is water and stain resistant. Spray tester and pick glass were also used for identification of wet-ability and count of fabric. Black color cotton lining was used inside this kameez apron because it gives the comfort to the wearer. These clothing were shown in Figure 1 and Figure 2. The cost of female kameez apron is ₹ 320 while cost of head cap is ₹55. The researcher was designed the protective clothing within the reach price for maximum number of female workers which was ₹100-500.

4. Conclusions

It has been concluded from the study that most of the female workers belonged to joint family and their age was between the 30-50 years. They belonged to lower socio-economic groups due to low level of education. It was also found from the study that most of the female workers faces the problems at the time of work. The workers work in dense and humidify areas, where they face itching, allergies and infections. Hence, researcher designed the kameez apron and cap for the dairy workers to overcome their occupational health problems. Protective clothing constructed from polyester taffeta silver coated fabric which was water resistant with inside cotton lining which gave better comfort to the wearer. The protective clothing help the workers at the time of work without affecting their working efficiency.

5. References

1. FAO. Dairy production and products. Retrieved on November 20, from <http://www.fao.org/agriculture/dairy-gateway/milk-production>, 2016.
2. ILO. Dairy Farmer. *International Hazard Datasheets on Occupation*. Published by the HDOEDIT (©ILO/CIS,

1999) program, 2000.

3. Singh V. Smallholder Dairy Farming in Uttaranchal, India: Characteristics, Constraints, and Development Opportunities. *Thesis*, Ph. D. G.B. Pant University of Agriculture and Technology, Pantnagar, India, 2000, 70.
4. Pinzke S, Stål M. Hansson GA. Physical workload on upper extremities in various operations during machine milking. *Ann. Agric. Environ. Med.* 2001; 8(1):63-70.