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Occupational hazards faced by commercial laundry men

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■ **ABSTRACT :** Commercial laundering plays very vital role in human being life. Commercial laundering services is perfect for all bedding linen, work wears, uniforms and towels. The purpose of this paper is to investigate the commercial laundering practices, to know which type of cleaning agent and methods are used in commercial laundering and problem faced by them. Sample for the study was randomly selected by Udaipur doing commercial cleaning from last one to two decade. Study results revealed that soap and detergent powder was mainly used for cleaning of white and coloured cotton and synthetic clothes while silk and woollen garments were washed using neutral detergents and usually dry cleaned. The bleaches commonly used in the laundry process are sodium perborate and sodium hypochlorite. For sizing of cotton, refine wheat flour was used but for silk, gum starch was used. Major health hazards faced by commercial laundry men were physical hazards *i.e.* muscular pain, shoulder pain and back ache. Health problems due to chemicals were skin allergies, breathing problem, eye irritation and itching.

■ **KEY WORDS:** Commercial laundering, Sizing, Bleaching, Health problems

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Care of textile products is an important element in consumership (Vatsala, 2003). It includes condition of cleaning and maintenance and the proper storage of these textile products when they are not being worn (Kumari, 2003). Woolens should be given sensible care if long services are to be expected. They should be brushed and place on hanger carefully. The proper care of clothes will keep them neat and clean and will increase their wearing life as well as save time and money. A person will look well dressed only when his /her clothes are clean, free of perspiration order and stains. The effective removal of accumulated soils from cleaning cloths is a critical component to any successful cleaning process. Commercial laundries deal with fabrics that are soiled beyond the level of typical residential clothes in both: variety of dirt, grime, stains, food, chemicals, bacteria, grease, biological hazards; and the concentration of these substances embedded in the fabric. A commercial or off-premises laundry refers to laundering activities performed outside the establishment *i.e.* given on a contract basis to specialists in the field. The clothes can be either dry cleaned or wet laundered. The soiled garments are first manually inspected and any stained spots treated with special chemicals to ease removal later. The washed clothes are pressed, straightened and folded at the final stages. When deciding to send his/her garments for a particular type of cleaning, a customer needs to understand the basic differences between the methods employed. Therefore, laundering processes need to be reviewed and any required process changes implemented, before a successful cleaning programme can be implemented. Different cloths require laundering processes that differ from cotton cloths. The Indian families are required to make many decision regarding the acceptance of new technology in the area of housing, farm and clothing care and maintenance practices. The present study was undertaken with the objective to find out type of soap and detergents, washing methods and starching agents used by commercial laundry men and to find out the occupational problems faced by them.

■ RESEARCH METHODS

Data for the present research work were collected by

the commercial laundry man doing laundering of garments from last one to two decade using pre - tested structured interview schedule. Thirty laundry men were randomly selected and personal interview method was used to collect the data. Data were analyzed for frequency and percentage.

■ RESEARCH FINDINGS AND DISCUSSION

It is evident from Table 1 that majority of the respondents (73.3%) were in age group of 31-40 years, belonged to SC/ST (60%) followed by backward caste (40%). Nearly fifty per cent were from nuclear family and 53.3 per cent were having 5-8 members. More than half of the respondents (53.3 %) had education up to Middle level, where as 40 per cent studied up to Primary level. Majority of the respondents (86.6%) had own business as their main family occupation and rest 13.33 per cent respondents were also doing service.

Specific information:

Washing agent used in laundering:

Cent per cent respondents used detergent powder for white cotton, coloured cotton, cotton polyester blends and synthetic fabric but sometimes they used self-made soap solution for rigid stains on cloth. One third respondents used washing soap for white cotton, coloured cotton, cotton polyester blends and synthetic fabric (Table 2).

Table 1: General profile of the respondents (n=30)

Sr. No.	Aspects	Categories	No of respondents	
			Frequency	Percentage
1.	Age	31-40	22	73.3
	(in years)	41 -50	08	26.6
2.	Caste	SC/ST	18	60
		Backward OBC)	12	40
		General	-	-
3.	Family	Nuclear	16	53.3
	type	Joint	14	46.6
	Family	Small (up to 4 members)	12	40
	size	Medium (5-8 members)	16	53.3
4.	Education	Up to primary	12	46.6
		Up to middle	16	53.3
		Up to metric	02	6.6
		Higher secondary	-	-
5.	Monthly	Less than 10,000	06	20
	income	10,100-15,000/-	20	66.66
	(Rs.)	15100-20,000/-	04	13.33
		More than 20,000		
6.	Family	Business	26	86.6
	occupation	Agriculture	-	-
		Services	04	13.33

Using washing soap is a manual process so it is more time consuming as compared to machine wash. Equal per cent (53.33) respondents used neutral liquid soap for white

Table 2: Washing agents used for laundering clothes (n=30)

Sr. No.	Washing agent	White cotton		Coloured cotton		Cotton polyester blends		Synthetic		Silken		Pure woolen sweaters		Woolen sweaters		Woolen shawls	
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1.	Detergent powder	30	100	30	100	30	100	30	100	-	-	-	-	-	–	-	-
2.	Washing soap	10	33.33	10	33.33	10	33.33	10	33.33	-	-	-	-	-	–	-	-
3.	Neutral liquid soap	16	53.33	-	-	-	-	-	--	16	53.33	16	53.33	20	66.66	20	66.66
4.	Reetha nut	-	-	-	-	-	--	-	-	14	46.66	14	46.66	12	40	-	-
5.	Get dry cleaned	-	-	-	-	-	--	-	-	30	100	24	80	20	66.66	18	60

Table 3: Method followed for laundering clothes (n=30)

Sr. No.	Washing steps	Soaking clothes in				Wash in warm water		Wash in cold water		Machine wash		Hand wash		Dry clean		Stone wash / beating	
		Hot soap solution		Cold soap solution													
		F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
1.	White cotton	23	76.67	20	66.66	20	66.66	30	100	30	100	-	-	-	-	20	66.66
2.	Coloured cotton	-	-	-	-	-	-	30	100	30	100	-	-	-	-	-	-
3.	Synthetics	-	-	-	-	-	-	30	100	30	100	-	-	-	-	-	-
4.	Cotton polyester blend	-	-	-	-	-	-	30	100	-	-	-	-	24	80	-	-
5.	Silken clothes	-	-	-	-	06	20	-	-	-	-	-	-	24	80	-	-
6.	Woolen shawls	-	-	-	-	-	-	20	66.66	-	-	-	-	24	80	-	-
7.	Woolen sweater	-	-	-	-	-	-	04	13.33			04	13.33	26	86.57	-	-
8.	Suits/ coats		-	-	-	-	-	-	-	-	-	-	-	30	100	-	-

cotton, silk, pure woolen sweaters, woolen sweaters and shawls. Reetha nut was used for pure woolen sweaters (46.66%) and woolen sweaters (40%) but one third respondents used reetha nuts for silk because silk is a very delicate fabric so no harsh chemicals are used for laundering the silk. For preventing the silk luster they used vinegar (one tsp./10 liter water) and never dried it in sunlight and ironing was done on medium heat and soaking into water is avoided. Silk is usually dry-cleaned.The traditional cleaning method involves the immersing of garments in water together with other cleaning agents such as detergent powder, washing soap, and neutral liquid soap and reetha nuts. The clothing is tumbled in the washing machine while the detergent removes the dirt particles during the agitation process. Water is then removed from the clothes during the spinning process. After this step is completed, the clothes are subsequently dried in a dryer or hung up to dry. They are then taken for pressing and steaming to soften the fabric.

Method of preparation of soap solution:

Few commercial laundry men said that they prepared soap solution by mixing slury, caustic soda, urea and water. When asked about the proportion, they refused to tell about the proportion on the name of trade secret.

Method used for laundering clothes:

It was reported by the majority of the respondents that in commercial laundering, soaking the garments before laundering is beneficial as it loosens the dirt, care was taken when loading in to washing machine as over loading results in creases which are difficult to remove later. The data regarding laundering methods used have been depicted in Table 3. It was found 76.67 per cent respondents used hot soap solution while 66.66 per cent used cold soap solution for white cotton. Only 66.66 per cent respondents sometimes used warm water for white cotton only. As per data shown in Table 3, cent per cent respondents used cold water for washing white cotton, coloured cotton, synthetics, cotton polyester blends, whereas 66.66 per cent and 13.33 per cent respondents used cold water for woolen shawl and woolen sweaters, respectively. 100 per cent respondents used machine for cleaning clothes because hand wash is a time consuming process and dry cleaning is mainly used for silken clothes, woolen shawls and woolen sweaters as shown in Table 3. For drying the fabrics, few laundry men used hydro- extraction machine followed by ironing the fabric quickly.

Bleaching agent used:

Bleaching agent was only used on white articles. Bleaching agents remove colouring matter by their oxidizing or reducing action. If bleach is not in liquid form then it was dissolved in hot water and used. It was also told that laundry men ensured that no powder residue remains in the washing machine which may affect later loads. The bleaches commonly used in the laundry process are sodium perborate and sodium hypochlorite.

Preventive measures used for bleeding colour:

Colour bleeding and fading is a most common with flourcent colours as well as bright red, green, blue, purple and black as reported by the respondents. Measures used to avoid the colour bleeding are:

–Add salt in washing water.
–Use alum in washing water.
–Spreading the article and clean the article using spot cleaning method.
–If colour bleeds usually the article is dry-cleaned.

Starching clothes:

Starch is well known stiffening agent used in laundry work for cotton and linen fabrics. Gum and gelatin are the stiffening agents used for silk. A small amount of stiffness to the washed cloths gives them a smooth glossy surface, which is resistant to dirt and dust.

Analysis of Table 4 indicates that cent per cent respondents gave sizing treatment to cotton sari, about one third of the respondents to cotton *salwar, kurta* and *dupptta* (33.3%) and only 13.3 per cent respondents gave starch on cotton and silk shirts and turban and pagadi.

Table 4 : Type of clothes starched (n=30)

Sr. No.	Clothes	F	%
1.	Shirt	04	13.33
2.	Kurta	10	33.33
3.	Sari	30	100
4.	Salwar-kameez	16	53.3
5.	Turban and Pagdi	04	13.33
6.	Dupptta	10	33.33

Stiffening agent used:

Stiffening agent is used to impart a better appearance to the fabric. The use of starch also declined due to the minimum-iron finishes on fabrics and garments and the reduced use of cotton in favour of man-made fibres. However, there are some articles that have a better feel and

Table 5 : Stiffening agent used on cotton and silk (n=30)

Sr. No.	Stiffening agent	Cotton WMS	Wool WMS
1.	Maida	1.13	-
2.	Rice	0.53	-
3.	Arrowroot	0.8	-
4.	Sago	0.8	1.33
5.	Maize	-	-
6.	Instant (Revive)	.466	-
7.	Gum	-	1.466

drape when starched. Table 5 depicts the weighted mean scores (WMS) for the use of different sizing / starching agents on cotton and silk fabric.

Information regarding stiffening agents used clearly reveals that cotton cloths were only starched with different stiffening agents and sometimes silk clothes are also sized. Majority of respondents always used maida (WMS 1.13). Arrowroot and sago were used by equal number of respondents for cotton (0.8) and rice was used by the respondent (WMS 0.53). Instant stiffening agent was sometimes used in commercial laundering of cotton (WMS., 0.466). Reason for less use of instant starch /revives as reported was customer,s dissatisfaction and complain that starch comes out on body and gives the feeling of stickiness. So, it is used only to fullfil the urgent orders. Gum (1.466 WMS) and sago (1.33 WMS) was used for silk as a stiffenig agent.

When asked about ratio of stiffening agent used, all respondents said that they were preparing the sizing solution on approximate basis, no fixed ratio of water and sizing substance was taken. All the respondents reported that by experience they were able to determine the desired concentration of sizing solution for starching of different type of clothes.

Deulkar (2002) also reported that the strength of the starch used depends upon two factors:

– The thickness of the fabric.

– The stiffness required in the articles.

The thin texture fabrics need heavy starching, whereas the thick diluted.

Process of preparation of starch from maida / rice flour and arrowroot:

Material liquid ratio:

1 table spoon maida/ rice flour /arrowroot, 2 table spoon cold water.

Mix the maida/ tice flour /arrowroot to a smooth paste with cold water in a container. Pour over the boiling water quickly; stir all the time till a colour change takes places. This is the full strength of starch. It was diluted immediately by adding to it an equal volume of cold water, if it is allowed to remain without dilution, it will form a solid lump as it cools. The solution is filtered, and then this was used for starching of cotton and linen clothes and bed sheets. The starch is dried well on the fabrics. Then the fabrics are damped evenly before ironing to get good results.

Preparation of sago starch:

Material liquid ratio:

100 g sago in 250 ml of water.

Sago was over night soaked in to water. Then boil the soaked sago till the solution becomes thick, after that dilute the boiled sago solution with the water and filter the solution, then this was used for starching of silk clothes.

Preparation of gum powder starch:

It is a preparation made with gum, a gelatinous fluid from the tropical tree, which dries by exposure to the air. Gum water is used for stiffening silks and rayon.

Material liquid ratio:

100g of gum and 500 ml of water.

Soak the gum in the water overnight in a container. Stand the jar in hot water to dissolve the gum. Stir occasionally, stain through a muslin and rinse the articles in water to which the gum water is added in the proportion of a tea spoon to half litre of water. Stir the water well before putting in the article.

Health hazards faced:

Researchers also collected information regarding health hazards faced by commercial laundry men. Data of Table 6 clearly reveal that major health hazards faced by commercial laundry men were muscular pain (85.33%), shoulder pain (56.7%) and back ache (46.67%).

Table 6 : Health hazards faced by commercial laundry men (n=30)

Sr. No.	Health hazards	Percentage
1.	Muscular pain	85.33
2.	Shoulder ache	56.7
3.	Back ache	46.67
4.	Eye irritation and itching	16.67
5.	Pain at hand	16.67
6.	Wrist pain	9.99
7.	Body ache	20.0
8.	Skin allergies	30.0
9.	Breathing problem	23.33

Eye irritation and eye itching (16.67%) and breathing (23.33%) problem was mainly faced while handling bleaches and stain removing chemicals. The main reason for body ache, shoulder ache, pain at hand was too many repeated manual tasks. Some of the most common tasks observed during data collection which may cause health hazards in laundries and dry cleaners are: pushing and pulling heavy trolleys, lifting and carrying laundry bags, loading and unloading washers and dryers and folding and sorting laundry. Many research studies indicate that the task which involves high force, bad postures, static postures such as standing for long periods, or repeated movements can cause health hazards or injury. These tasks need to be identified and changed to reduce the likelihood of injury. During interview, researchers also observed that commercial laundering staff never used any type of

protective clothing on their head, eyes, face and hands to protect themselves from harsh chemicals and strong sunlight. Hence, the need arises to give training and instruction to make them aware of the problems from the direct contact with harsh chemicals used in commercial laundry. Kumari (2003) made on exploratory study on clothing care and maintenance practices of rural women of Rajasthan.

Conclusion:

On the basis of results of the study it can be concluded that commercial laundering persons were working in awkward posture, affecting the health. Repetitive motions of the upper limbs long duration, high exertion further amplifies their problem and were taking no precautionary measures nor using any type of personal protective clothing to save themselves from strong chemicals. Hence, the need arises to impart training to adopt the correct posture while working and use personnel protective clothing.

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