

Research Paper :

Effect of laundering on physical properties of school uniform fabric

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ABSTRACT

The present study was conducted to find out the effect of launderings on physical properties of school uniform fabrics. The respondents of present study comprised of 80 mothers of school going children, randomly selected to collect the desired information through self-structured interview schedule. Frequency and percentages were used for analysis of data for present study. Major findings revealed that majority of respondents using various soaps were 'Rin' (37.5%), 'Wheel active' (31.2%) and 'Nirma' (11.2%). However, 'Super Nirma' detergent was used by 25 per cent, 'Tide' by 20 per cent respondents for laundering school uniform. Majority of respondents (61.2%) used particular soap/detergent to remove stains, whiten the fabric and washed with other household clothes (53.7%). Hand washing was done by 56.2 per cent of respondents and frequency of washing was daily as reported by 38.7% respondents. The data depicted that respondents observed changes in colorfastness (77.5%), pilling and lustre (63.7%), weight (55%) and crease recovery (52.5%) when asked about the effect of soaps and detergents on physical properties of school uniform fabric over repeated launderings.

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When a child starts going to school, he or she begins taking interest in clothing. Parents need to help their children in the appropriate selection of material with adequate safety and comfort features. A medium or light weight blend of good quality is an excellent choice of material for clothing as it can be easily laundered and comfortable to wear. The material for school uniform should be inexpensive, durable and easily washable with smooth texture and comfortable to the skin. Children want to run, climb, jump and squat without being aware of clothes hampering them.

The appropriateness of a costume, quality, style, neatness and cleanliness in clothing helps to build self-confidence and even sense of security. The purpose of laundering is to remove soiling matter from textile articles to refinish them to their shape and in good condition. The school dress is badly soiled and stained during children's activities in whole day. Therefore, housewives require those soaps and detergents, which can remove the soil and stains from the fabric efficiently with minimum destruction. As far the consumers, serviceability and durability are most important characteristics of the fabric used in school uniform due to occurrence of daily wear and tear during laundering process. Most of the women did not consider the type or nature of fabric before

selecting particular soap and detergent. Because housewives are unaware about the physical properties of school uniform fabric. The physical properties of the fabric give the knowledge about the fabric for their serviceability, extensibility, flexibility and porosity but individually play an important role in deciding about the suitability of the fabric for its specific end use. Hence, the present paper was an attempt to find out the effect of washing practices on physical properties of school uniform.

METHODOLOGY

The present study was conducted in Udaipur city of Rajasthan. Two Senior Secondary schools were selected purposively for the study. From each school, 40 students comprised of housewives (mother) were randomly selected on their willingness to participate in the study. Thus, constituting the total number of 80 respondents. Keeping in mind the objective and sample of the study, self-structured interview schedule was developed to gain information regarding the effect of washing practices in school uniform. Frequency and percentages were used for analysis of data.

FINDINGS AND DISCUSSION

Data of Table 1 reveal that respondents were using

Table 1 : Frequency and percentage distribution of respondents by soaps commonly used in home laundering (n=80)

Sr. No.	Variable		Soaps		Detergents	
	Soaps	Detergents	f	%	f	%
1.	Rin (S ₁)	Nirma blue (D ₁)	30	37.5	20	25
2.	Wheel active (S ₂)	Tide (D ₂)	25	31.2	16	20
3.	Super nirma (S ₃)	Surf excel (D ₃)	9	11.2	10	12.5
4.	Henko (S ₄)	Arial (D ₄)	7	8.7	8	10
5.	Doctor green (S ₅)	Wheel active (D ₅)	7	8.7	7	8.7
6.	Mahajan (S ₆)	Ezee (D ₆)	1	1.2	7	8.7
7.	Kinara (S ₇)	Sagar (D ₇)	1	1.2	6	7.5
8.		Gari detergent (D ₈)			3	3.7
9.		Nirma yellow (D ₉)			3	3.7

seven different types of soaps and nine detergents for home laundering *i.e.* to wash all type of fabrics including school uniforms. It clearly shows that 37.5 per cent of the respondents used S₁ soap followed by S₂ (31.2%). whereas, S₃ soap was being used by 11.2 per cent respondents followed by very less number of respondents used other soaps. It was found that respondents preferred particular soap for its ability to clean the fabric properly by making sufficient leather. Another reason as reported by few respondents was the problem of hard water in their area, which required particular soap for laundering. It was also found that most of the respondents used same detergents for laundering all types of fabrics. Out of nine detergents, majority of respondents (25%) preferred D₁ detergent to launder family clothes including school uniforms followed by 20 per cent respondents preferred D₂ detergent. D₃ detergent was used by (12.5%) respondents followed by D₄ detergent (10%). A small number of respondents used other detergents. The results are supported by the findings of Jacob (1998), who concluded that almost all the respondents used the same detergents for laundering all types of fabrics. It is concluded that respondents used all types of detergents to launder their clothes irrespective of the nature/constituents of detergents. This may be due to lack of proper knowledge.

Data pertaining to Table 2 reveal that majority of

Table 2 : Frequency and percentage distribution of respondents by the reason for using particular soaps/detergents (n=80)

Sr. No.	Variable	Frequency	Percentage
1.	Remove stains and whiten the fabrics	49	61.2
2.	Make foams properly	11	13.7
3.	Due to hard water	15	18.7
4.	Because it is in our budget	5	6.2

the respondents (61.2%) were using particular soaps/detergents because they remove stains and whiten the fabrics properly. Whereas, 18.7 per cent respondents were using them because of hard water problem. Few respondents (13.7%) opined that the particular soaps/detergents make foams properly. A small proportion of respondents *i.e.* (6.2%) were using particular soaps/detergents as it was suiting their budget.

The data of Table 3 show that majority of respondents (53.7%) washed school uniform with other clothes because respondents think that it saves time and requires less amount of soaps/detergents and water. While, remaining 46.2 per cent respondents washed school uniforms separately to avoid the colour staining from other cloths. This may be absorbed by the light coloured uniformed fabric and affects the fabric appearance.

Table 3 : Frequency and percentage distribution of respondents by washing of uniform (n=80)

Sr. No.	Variable	f	%
1.	Washed separately	37	46.2
2.	Washed with other clothes	43	53.7

Table 4 clearly depicts that 56.2 per cent of respondents were using hand wash method to launder school uniform as it maintains the general aesthetic "feel" of the fabric. Whereas, 38.7 per cent of the respondents were using machine washing and very few respondents, (5%) were giving uniform to commercial laundry.

Table 4 : Frequency and percentage distribution of respondents by method of washing (n=80)

Sr. No.	Variable	f	%
1.	Hand wash	45	56.2
2.	Machine wash	31	38.7
3.	Laundry wash	4	5

It is clearly observed from Table 5 that 22.5% of respondents firstly soaked in detergent then used soap for washing. Whereas 18.7% of respondents directly washed clothes by soap and remaining 15 per cent respondents directly soaked in detergent and then washed the clothes.

Table 5 : Frequency and percentage distribution of respondents by method of hand washing (n=80)

Sr. No.	Variable	Frequency	Percentage
1.	Pre-soak in detergent then wash	12	15
2.	Pre-soak in detergent then wash by soap	18	22.5
3.	Directly wash by soap	15	18.7

It is clear from Table 6 that 38.7% of the respondents preferred machine washing. Out of these, majority of respondents (70.9%) were using semi- automatic machine to launder school uniform. Remaining (29%) respondents preferred fully-automatic machine to launder school uniform.

Table 6 : Frequency and percentage distribution of respondents by type of machine used (n=31)

Sr. No.	Variable	Frequency	Percentage
1.	Semi - automatic	22	70.9
2.	Fully - automatic	9	29.0

Table 7 clearly depicts that 38.7 per cent of the respondents laundered uniform daily because they had only one pair of uniform and were obsessive about cleanliness. Whereas, 25% of the respondents laundered uniform twice in a week because they were of the view that daily washing was not possible due to time constraints and cost effectiveness of soaps/detergents and frequent rubbing during washing may cause pilling and affect fabric strength. Only 18.7 per cent respondents laundered uniform thrice in a week and remaining (17.5%) respondents laundered in alternate days. Respondents

Table 7 : Frequency and percentage distribution of respondents by frequency of washing (n=80)

Sr. No.	Variable	f	%
1.	Daily	31	38.7
2.	Alternate days	14	17.5
3.	Twice in a week	20	25.0
4.	Thrice in a week	15	18.7

who had two or more pairs of uniform for their child, told that their frequency of washing uniform was either twice or thrice in a week.

The data of Table 8 depict that majority of respondents (77.5%) observed change in colorfastness of school uniform fabric after washing. Even majority of respondents (63.7%) found changes in luster and pilling in school uniform. Whereas, only 55% respondents observed the differences in weight *i.e.* it may be decrease and increase weight of uniform followed by 52.5 per cent respondents observed that there was difference in crease recovery of fabric after washing. An equal number of 47.5 per cent respondents observed changes in tensile strength and shrinkage followed by 38.7% of respondents

Table 8 : Frequency and percentage distribution of respondents by type of changes observed in physical properties of uniform fabric after repeated launderings (n=80)

Sr. No.	Variable	f	%
1.	Fabric count	31	38.7
2.	Thickness	23	28.7
3.	Weight	44	55.0
4.	Bulk	23	28.0
5.	Luster	51	63.7
6.	Tensile strength	38	47.5
7.	Drape coefficient	27	33.7
8.	Shrinkage	38	47.5
9.	Crease recovery	42	52.5
10.	Abrasion resistance	6	7.5
11.	Pilling	51	63.7
12.	Colorfastness	62	77.5

who had observed change in fabric count of uniform cloth. Whereas, 33.7 per cent of total respondents also observed changes in fabric stiffness followed by (28.7%) respondents who had observed changes in thickness and bulk of the uniform cloth. Small proportions of respondents (7.5%) from total respondents observed changes in abrasion resistance of uniform fabric. This result was supported by the findings of Desai (2002) that cotton and cotton/polyester blended fabrics showed deterioration in physical properties *i.e.* crease recovery angle, stiffness, tensile strength, tearing strength and shrinkage after repeatedly washed for ten times.

Conclusion:

The present study concluded that respondents commonly used detergents *i.e.* Nirma blue, Tide and Surf excel and soaps such as Rin, Wheel active and Super

Nirma. Other detergents/soaps were used by very less number of respondents. Respondents used particular soap/detergent to remove stain and whiten the fabric and majority washed school uniform with other household clothes. The homemakers were also using the soaps/detergents, having florescent whitening agent, which is normally recommended for use on white fabric but it may cause colour fading in coloured clothes thereby affect other physical properties as well. The pH of the selected soaps being highly alkaline affect the physical properties of school uniform. Majority of respondents used hand washing method for daily washing. Respondents observed adverse effect on colorfastness, pilling, loss of lustre, crease recovery and weight properties of the school uniform fabric after repeated launderings. It was concluded that the housewives should be given proper training in selection and use of particular soap/detergent

to retain the physical properties of school uniform for longer period of time.

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