

# An Observational Study Assessing the Association of Soap and Cream Use with the Occurrence of Skin Complications among Elderly Persons

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Conflict of interest: Nil

## Abstract

**Aim:** The aim of the present study was to assess the association of soap and cream use with the occurrence of skin complications among elderly persons in the tertiary care hospital in Bihar region.

**Methods:** The study was carried out in Department of Skin and VD, Jai Prakash Narayan Hospital, (JPNH) Gaya, Bihar, India. The study population included individuals aged 60 years and above presenting to JPNH for medical attention and are admitted to the wards after presentation. A purposive cross-sectional sampling of 100 elderly patients that were admitted to the different wards of the hospital within a 3-month period was carried out.

**Results:** In the present study, majority of the participants belonged to 65-74 years age group and there were male predominance. 70% were married, 36% were retired. 55% were staying with their spouse. 75% showed prevalence of skin complications among the study participants. Xerosis was the most common skin complication (55%), followed by itching (26%) and post bleaching-syndrome (19%). There was no significant difference in the distribution of the type of soaps used by gender. The distribution of post bleaching syndrome was significantly associated with a relatively high use of medicated soaps with post-bleaching syndrome. The distribution of post bleaching syndrome and age groups was found to be statistically significant.

**Conclusion:** There was a considerable occurrence of post bleaching syndrome among the participants. In a bid to improve skin care among the elderly, it is important that the geriatric population is educated on the appropriate applications of skin care products for an improved quality of life.

**Keywords:** Soaps; cream; elderly; complications

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## Introduction

“Senior citizen” or “elderly” is a person who is of age 60 years or above as defined by the “National Policy on Older Persons” adopted by the Government of India in January 1999. [1] A growth in the elderly population has been noted due to a substantial reduction in mortality owing to

economic well-being, better health-care systems and advancements in the field of Medicine. This phenomenon, called population aging, is a dynamic demographic trend seen all over the world. [2] The numbers of older people living in care settings and occupying hospital

inpatient beds are rapidly rising. [3] As an important aspect of self-care among older persons, bathing serves the physiological purpose of cleaning away accumulated waste materials and dead skin that might otherwise lead to dull complexion. It also serves the social purpose of maintaining an acceptable standard of cleanliness and provides individuals the opportunity to revive and refresh through the washing process. As with all organs of the body, age acts the skin, which inevitably becomes more vulnerable to damage. [4] The skin, as the largest organ system in the human body [5], represents the first point of contact for virtually all objects, organisms, and other factors that interact with the body. Skin integrity is essential in many ways for maintaining health, as through temperature regulation and protection of deeper tissues from ultraviolet radiation and pathogenic organisms [6] The term 'skin integrity' refers to the skin as a sound and intact structure. Conversely, impaired skin integrity is defined as an "altered epidermis and/or dermis...destruction of skin layers (dermis), and disruption of skin surface (epidermis)". [7] There is a reduction in the number of cutaneous blood vessels and nerve endings, and in the amount of connective tissue, which contains collagen and elastin. [8,9] The skin has an acidic surface pH, which is important for maintaining skin integrity thorough microflora regulation and physiological processes. [10] Consequences from the continuous use of alkaline cleansers for bathing may have gone unnoticed in the healthy population as the skin is able to repair itself quickly. However, the overall effect of alkaline soaps in our environment, especially among elderly persons is yet to be studied. The use of herb containing black soap and medicated germicidal soaps for bathing is

a common response to the onset of a rash in this environment. Components from soaps and creams are left on the skin for extended periods of time. It has however been observed in most of the dermatology clinics in our environment that the frequent use of toilet or medicated germicidal soaps on diseased skin increases the inflammation and irritation of the skin. [11,12,13] The paucity of data on the preferences and goals of older persons regarding bathing and skin care creams in the local setting. Hence, the study was carried out to assess the association of soap and cream use with the occurrence of skin complications among elderly persons in the tertiary care hospital in bihar region.

### Material & Methods

The study was carried out in Department of Skin and VD, Jai Prakash Narayan Hospital,(JPNH) Gaya, Bihar, India. The study population included individuals aged 60 years and above presenting to JPNH for medical attention and are admitted to the wards after presentation. A purposive cross-sectional sampling of 100 elderly patients that were admitted to the different wards of the hospital within a 3-month period was carried out. Data collection sheet was used to collate demographic information, dermatological conditions, soap use and cream use from the subjects.

### Statistical Analysis

The data collected was analysed using the SPSS v25 software at a 95% confidence interval and a p-value less than 0.05 was considered significant. The demographic characteristics and dermatological distributions were presented using frequencies and percentages. The association of dermatological lesions with gender and chronic illnesses was assessed using the Chi-square statistics.

### Results

**Table 1: Sociodemographic distribution of participants**

Age groups	N%
60-64 years	50 (50)
65- 74 years	25 (25)
75-84 years	15 (15)
85 and above	10 (10)
<b>Gender</b>	
Male	60 (60)
Female	40 (40)
<b>Marital Status</b>	
Single	1 (1)
Married	70 (70)
Widowed	26 (26)
Divorced	3 (3)
<b>Occupation</b>	
Retired	36 (36)
Farming	20 (20)
Business	15 (15)
House wife	10 (10)
Mechanic/Technician	3 (3)
Security personnel	3 (3)
Engineer	2 (2)
Medical Doctor	2 (2)
Civil Servant	2 (2)
Others	7 (7)
<b>Economic dependency</b>	
Self	55 (55)
Family	40 (40)
Both Self & Family	3 (3)
Govt/Institution	2 (2)
<b>Social/Family Support</b>	
Yes	98 (98)
No	2 (2)
<b>Resident with</b>	
Spouse	55 (55)
Daughter	15 (15)
Son	10 (10)
Alone	9 (9)
Children	4 (4)
Grandson	3 (3)
Other relatives	2 (2)
Care givers	2 (2)

In the present study, majority of the participants belonged to 65-74 years age group and there were male predominance. 70% were married, 36% were retired. 55% were staying with their spouse.

**Table 2: Prevalence and distribution of skin complication**

<b>Prevalence</b>	<b>N%</b>
Skin complications	75 (75)
No Skin complications	25 (25)
<b>Distribution</b>	
Xerosis	55 (55)
Itching	26 (26)
Post-bleaching syndrome	19 (19)

75% showed prevalence of skin complications among the study participants. Xerosis was the most common skin complication (55%), followed by itching (26%) and post bleaching-syndrome (19%).

**Table 3: Types of body creams and lotions used in senior citizens as seen in the study**

<b>Type of body cream and soap used</b>	<b>All senior citizens n (%)</b>	<b>Male n (%)</b>	<b>Female n (%)</b>	<b>p-value</b>
<b>Body cream</b>				
Moisturizing	33 (33)	18 (30)	15 (37.5)	0.440
Medicated/Bleaching	17 (17)	6 (10)	11 (27.5)	
No Specific Cream	40 (40)	28 (46.66)	12 (30)	
None	10 (10)	8 (13.34)	2 (5)	
<b>Bathing Soap</b>				
Moisturizing	55 (55)	34 (56.66)	21 (32.5)	0.475
Medicated/Bleaching	20 (20)	10 (16.66)	10 (25)	
No Specific Cream	24 (24)	16 (26.66)	8 (20)	
None	1 (1)	1 (3.34)	0 (0)	

The most commonly used was moisturizing cream (33%) followed by bleaching cream (17%). However, 40 (40%) of the participants indicated they did not use any specific cream and 15 (10%) indicated that they did not use any cream. The distribution of types of cream and gender was not statistically significant (p = 0.440). The distribution of bathing

soap used by the participants showed that the most common bathing soap was moisturizing/toilet soap (55%), followed by the use of no specific soap (24%) and medicated/bleaching soap (20%). There was no significant difference in the distribution of the type of soaps used by gender.

**Table 4: Distribution of classes of soap used and complications**

<b>Classes of soap</b>	<b>Xerosis</b>		<b>Itching</b>		<b>Post bleachingsyndrome</b>	
	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>	<b>Yes</b>	<b>No</b>
Medicated	12	10	4	20	9	15
Non-medicated/toilet	23	22	12	29	7	40
No specific soap	20	12	10	24	3	25
None	0	1	0	1	0	1
P-values	0.155		0.620		0.025	

The distribution of post bleaching syndrome was significantly associated with a relatively high use of medicated soaps with post-bleaching syndrome.

**Table 5: Association of sex, age group and cream complications**

Age groups	Xerosis		Itching		Post-bleaching syndrome	
	Yes	No	Yes	No	Yes	No
60-64 years	13	14	9 (33.3)	27 (27.3)	6 (35.3)	30 (27.5)
65- 74 years	15	22	11 (40.7)	35 (35.4)	9 (52.9)	37 (33.9)
75-84 years	10	17	5 (18.5)	31 (31.3)	2 (11.8)	34 (31.2)
85 and above	3	6	2 (7.4)	6 (6.1)	0 (0.0)	8 (7.3)
p-value	0.730		0.640		0.185	

The distribution of post bleaching syndrome and age groups was found to be statistically significant.

### Discussion

As an important aspect of self-care among older persons, bathing serves the physiological purpose of cleaning away accumulated waste materials and dead skin that might otherwise lead to dull complexion. It also serves the social purpose of maintaining an acceptable standard of cleanliness and provides individuals the opportunity to revive and refresh through the washing process. As skin ages, the epidermis and dermis become thinner and flatter and the skin's mechanical strength declines. [14,15] There is a reduction in the number of cutaneous blood vessels and nerve endings, and in the amount of connective tissue, which contains collagen and elastin. [16,17]

In the present study, majority of the participants belonged to 65-74 years age group and there were male predominance. 70% were married, 36% were retired. 55% were staying with their spouse. 75% showed prevalence of skin complications among the study participants. Xerosis was the most common skin complication (55%), followed by itching (26%) and post bleaching-syndrome (19%). This was consistent with reports of similar studies, where the choice of soaps among elderly peoples tend to vary among individuals,

with many adults not having specific preferences and would rather use what was available. [18-20] The most commonly used was moisturizing cream (33%) followed by bleaching cream (17%). However, 40 (40%) of the participants indicated they did not use any specific cream and 15 (10%) indicated that they did not use any cream. The distribution of types of cream and gender was not statistically significant ( $p = 0.440$ ). The distribution of bathing soap used by the participants showed that the most common bathing soap was moisturizing/toilet soap (55%), followed by the use of no specific soap (24%) and medicated/bleaching soap (20%). There was no significant difference in the distribution of the type of soaps used by gender. Some authors have identified skin bleaching as a prevalent cultural practice and a normal part of life in some African countries; such studies suggest that skin bleaching is associated with social privilege, marital prospects, attraction to the other sex, and a bandwagon effect. [15,21-23]

The distribution of post bleaching syndrome was significantly associated with a relatively high use of medicated soaps with post-bleaching syndrome. The distribution of post bleaching syndrome and age groups was found to be statistically significant. Since these products are used for long duration, on a large body surface area, and under hot humid conditions, percutaneous absorption

is enhanced. The complications of these products are very serious and are sometimes fatal. [14,21,24] Some of these complications are exogenous ochronosis, impaired wound healing and wound dehiscence, the fish odor syndrome, nephropathy, steroid addiction syndrome, predisposition to infections, a broad spectrum of cutaneous and endocrinologic complications of corticosteroids, including suppression of hypothalamic-pituitary-adrenal axis. [15,18,25]

Hydroquinone and kojic acid are often used in skin bleaching creams. Harmful products such as Hydroquinone, Kojic acid, and Mercury are present in many skin lightening products. [26,27] Hydroquinone is considered as a primary topical ingredient for inhibiting melanin production because it reduces the skin's production of melanin which is responsible for skin color. [28] However, because of the carcinogenic nature of hydroquinone, it has been banned in some countries in a bid to reduce the risks of skin cancer. [29] Kojic acid on the other hand, known as Koji in Japan, is a fungal metabolic product which has the advantage of not being oxidized in skin lotions. [29] It is a chelation agent that is produced by several fungi including *Aspergillus oryzae*. It inhibits and prevents the formation of tyrosine and it contains some antimicrobial properties against several common bacterial stains even in small dilutions. [30]

### Conclusion

The study showed a considerable prevalence of post bleaching syndrome among the participants. The use of bleaching/ medicated soaps was observed to cause some significant dermatological complications among the participant. However, Xerosis was the most common skin complication reported. In a bid to improve skin care among the elderly, it is important that the geriatric population is educated on the appropriate applications of

skin care products for an improved quality of life.

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