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Effect of Standardized Skin Care Guidelines on Skin Dryness among Elderly People at Ismailia City

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Abstract
Background*: Aged Nursing home residents suffer from a wide range of skin problems. Skin dryness is the most prevalent skin problems in this group.*
Aim of the study: *The present study aimed to evaluate the effect standardized skin care guidelines on dry skin among elderly people at Ismailia City.*
Design: *A quasi-experimental design was utilized to conduct this study.*
Setting*: The study was conducted in all nursing homes for elderly at Ismailia city.*
Sample: *A purposive sample of 105 Nursing home elderly residents who fulfilled the study inclusion criteria.*
Tools: *Two tools were used in the present study; the first tool was a structured interview questionnaire consisted of three parts; the second tool was the clinical scoring systems of EEMCO guidance.*
Results: *The results revealed statistically significant improvements in total scores of dry skin knowledge and skin care practices. There were statistically significant improvements of overall dry skin score (ODS) and in all dry skin specified symptoms (scaling, roughness, redness, and cracks fissures (SRRC)) at post skin care guidelines.*
Conclusion: *Standardized skin care guidelines are effective in reducing skin dryness in aged nursing home residents.*
Recommendations: *Standardized skin care guidelines should be implemented in the study settings on a long term basis to test its sustainability, and in similar settings to confirm its effectiveness and for further improvements.*
Keywords: *Standardized Skin Care Guidelines, Skin Dryness, elderly Nursing Home Residents.*

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I. Introduction

The skin is a complex, dynamic organ that acts as the barrier between the internal body and its surrounding environment. Similar to other body organs, the passage of time does not leave skin unaltered and both its structure and function are affected. The effects of skin ageing are not only visible to others resulting in detrimental cosmetic and social sequelae, but have greater association with dermatological conditions some of which confer considerable morbidity and mortality. Dermatological conditions are common in people of all ages. It has been reported that the majority of people over the age of 65 have at least one skin disorder[1].

Dry skin (xerosis) occurs because of loss of water from the corneal layer (outer layer). As a result, the skin is more susceptible to cracking, which can lead to itching, bleeding and dermatitis [2]. Dry skin, which is often characterized by itchy and prone to dermatitis, scaling [3]. Frequent dermatitis can lead to chronic wounds and infections, particularly on the lower legs and especially if treatment is delayed. Dry skin is a common condition that affects about 75% of those 65 years and older[4].

Dry skin in elderly people were reported to be caused by cold, dry air during winter, direct skin exposure to fan heaters, excessive immersion in water and use of alkaline soaps and detergents with ingredients that damage the skin barrier. In addition systemic disease, as lymphoma, malnutrition, resulting in acquired ichythyosis causing dry skin[5]. There are many risk factors for dry skin which include age related changes to skin thickness, elasticity and skin hydration, long-term sun damage, nutrition, medications such as corticosteroids, mobility, dependence on cares for all care activities, and vision impairment[6]. In the study by in Germany [7] founded that the prevalence of dry skin in institutional long-term care settings were range from 45.3% to 59%. Dry skin is often accompanied by pruritus which is also highly prevalent in multimorbid and older people. Pruritus induced scratching leads to excoriations and enhances inflammatory reactions leading to secondary infection[8].

Prevention of skin dryness can be defined as interventions to support skin barrier function and to restore or increase immune function and protection of the skin across the life span. This concept includes

primary, secondary, and tertiary prevention. Primary dry skin health prevention includes activities to protect healthy individuals from dry skin[9]. Standardized skin care prevent and manage skin dryness [10].

Fundamental of Standardized skin care, which includes skin cleansing, is recommended with a brief shower or bath (< 10 minutes) is advised and used cold or lukewarm water; the cooler water temperature dries the skin less than sustained immersion in hot water[2, 5]. According to the evidence based practice found that severely dry skin due to the amount of soap or cleansers used when showering. However, elderly people with severely dry skin should minimize the amount of soap or cleansers they use when showering, for instance, only to the axillae and groin [5, 11, 12].Applying moisturizers and or emollients is one of important factor from standardized skin care through moist skin once a day at a minimum and re-apply when required [11]. When emollients and moisturizers are insufficient, the use of ceramides may be considered[8]. A barrier cream may be used for hands and feet when scaling is present, consider a keratolytic such as a urea-based moisturizer, salicylic acid, lactic acid, or glycolic acid for mildly, moderately, and severely dry skin[13]. With increased moisture, the skin barrier can be restored [1, 14, 15]. For protection, mineral oil or silicone based products may be used. To rehydrate, glycerin, panthenol, hyaluronic acid, propylene glycol, butylene glycol, and urea-containing products are applied [8, 16, 17].

There are contributory factors for skin dryness prevention and maintain skin integrity among elderly people, which include intake diets which contain vitamin A, B12, and fibers, drinking enough fluids, and increase physical activity and exercise[4, 6]. This situation is extremely difficult because professional nurses and caregivers, particularly those in long-term institutional care, have a major responsibility in product selection, skin care, care education, reception and their relatives[2, 7].

Nurses play a vital role in organizing and delivering educational sessions that help in the prevention of skin dryness and apply standardized skin care for the aged by using structured, systematic planning process, and ongoing support for implementation. A core education session must take into account local circumstances and should be disseminated through an active educational and training program. These must be monitored to evaluate their impact on the prevention of skin dryness[18, 19].

II. Aim of The Study

The aim of the current study was to evaluate the effect standardized skin care guidelines on skin dryness among elderly people at Ismailia City.

2.1 This aim has been achieved through the following objectives:-

1- Assess elderly people knowledge and practice regarding skin care pre and post standardized skin care guidelines**.**
2- Assess elderly skin dryness degree among elderly people pre and post standardized skin care guidelines**.**
3- Implement standardized skin care guidelines to reduce skin dryness in elderly people at Ismailia City.
4- Evaluate the effect of standardized skin care guidelines on skin dryness among elderly people at Ismailia City.

2.2Research Hypothesis:

After implementation of standardized skin care guidelines, skin dryness in elderly people will be reduced.

III. Subjects And Methods

3.1 Research Design

A quasi-experimental design was used in this study.

3.2 Study Setting

The study was conducted in all nursing homes for elderly residents located at Ismailia city (two only). The first nursing home was Dar Eldeiafa nursing home; it was for both sexes of elderly people. This nursing home provides accommodation and social services in addition to some medical care at low cost for the elderly. The number of elderly accommodated in this nursing home was 114 elderly. The second nursing home was Abu-Negeda for elderly women only. This nursing home provides accommodation services only. The number of elderly women accommodated in this nursing home was 25 women.

3.3 Subjects

A purposive sample consisted of 105 elderly fulfilled the study inclusion criteria which were; (1) Age: 65 years and older, (2) Affected by dry skin, (3) Free from communication problems (speech and hearing problems), and (4) Not enrolled in any other interventional study and accept to participate in the study.

3.4 Tools for data collection

Tool I: A structured interview questionnaire: It was developed by the researchers to collect the necessary data for the study. It consisted of three parts:

Part 1: Demographic characteristics of the studied elderly:

This part entails data about demographic characteristic of the study sample such as; age, gender, educational level, income, marital status, etc.

Part 2: Skin dryness knowledge Questionnaire:

It assesses elderly knowledge about dry skin and to detect the needs for developing guidelines booklet; it was developed by researchers in Arabic Language which it applied as pre and post-test. Skin dryness questions consisted of 23 as MCQs, such as the function of the skin, definition of skin dryness, its causes, symptoms, complication and how to prevent it. Scoring system: a correct response was scored 1 and the incorrect zero. The total score for the sheet was 24grads, which used to determine maximum and minimum for each item to calculate mean and standard deviation.

Part 3: knowledge about skin care practices it included:

(a) Skin cleansing, such frequent showering or bathing, especially with hot water, for long periods breaks down the lipid barriers in the skin, type of towels used to dry the body and underwear loose cotton cloths (b) skin moisturizers and when it used, how many times used it in the day, and where to put it. The sheet consists of 24 questions answered by never, sometimes, and always. Never score was zero, sometimes scored 1 and always scored 2. The total score for the sheet 48 score. Summations for each items and calculate mean and standard deviation.

Tool II: The clinical scoring systems of EEMCO guidance adopted by Masson et al., 1995 to evaluate the visual signs of dry skin, it cover the following items:

1- Overall dry skin score (ODS)

The Overall Dry Skin score is a clinical assessment of the presence and severity of skin dryness using a five-point scale. A score of '0' indicates no skin dryness, whereas a score of '4' indicates advanced skin roughness, large scales, inflammation and cracks.

2- Specified symptom sum score (SRRC) system with grading of scaling, roughness, redness, and cracks described the following table.

Table I. Four signs of SRRC

	Scaling	**Roughness**	**Redness**	**Cracks fissures**
0 = absent		Perfectly smooth and pliable		
1 = slight	Small scales only, surface lightly dull in color	Slightly irregular and scratchy on tangential tactile evaluation	Small areas of minimal redness or diffuse faint redness	Single and superficial cracks in the examination filed
2 =moderate	Small scales in combination with larger scales (>0.05 mm), surface opaque or whitish	Definitely irregular and scratchy and possibly slightly stiffened on vertical tactile evaluation	Limited areas of definite redness or diffuse and obvious redness	Single or grouped superficial and more deep cracks
3 = severe	Larger and large scales (flake >1 mm) are prominent, surface whitish	Advanced irregularly and scratchy feeling associated with some stiffening	Large areas of definite redness or diffuse and more pronounced redness	As 2 but with deep cracks
4 = extreme	Larger flakes covering almost the entire skin surface in the examination field	Gross irregularity and major disturbance of skin marking and definite stiffening	Advanced redness in entire examination field (redness of cracks not included)	Dominated by deep cracks

3.5 Validity

The study also reviewed by five experts in fields of community health nursing and gerontological nursing. These experts to evaluate the tool clarity, relevance, application, comprehensiveness, and understanding of the tools. All recommended modifications in the tool were done.

3.6 Pilot study

The pilot study was applied on 10 subjects to test the clarity and understanding of the items and to know the time need to collect data. The final form was achieved through rearrangement, and modification done for the tools items. The subjects who shared in the pilot study were included in the study sample.

3.7Content reliability

Reliability of tools was assessed through estimating test-retest by administrating the same tools to the same subjects under similar conditions on two or more occasions. Internal consistency of the tools was assessed by calculated Cronbach alpha coefficients.

3.7 Ethical Consideration:

An informed consent for participation was taken verbally from each of the elderly subjects after full explanation of the purpose of the study. They were notified that they could withdraw at any time and were assured that any information taken from them would be confidential and used for the research purpose only.

3.8Field work

1. Official letters were issued from Faculty of Nursing, Suez Canal University, Egypt, and sent to the directors of Nursing Home to get their permission for collecting data. The letters explained the purpose of the study and sought their cooperation
2. Data collection for this study was carried out in the period from April 2017 until August 2017.
3. The researcher collected the data during the morning from 9 am to 1 pm at two days each week (Monday & Wednesday).
4. The researchers administrated the pretest questionnaire to all 105 subjects during the period of assessment. The pretest questionnaire was done to assess their knowledge and practice regarding dry skin.
5. The researchers applied visual scale of dry skin individually for each participant at different body parts (face, upper and lower limbs) within the purpose of the assessment was explained to them. The time consume to fill the sheet and assess the skin condition was 30-40 minutes.
6. Standardized skin care guidelines construct applied through:
   Four phases; Assessment, planning, implementation, and evaluation phase to assess elderly dry skin and then conduct skin care practices by used standardized skin care according to elderly needs.
7. Implementation of Standardized skin care guidelines:

The researcher distributed the standardized skin care guidelines. Then, the researcher explained skin care guidelines and asked questions for encouraging use of standardized skin care to prevent and treat dry skin.

3.9Contents of standardized skin care guidelines;

Introduction about skin functions and skin dryness; (b) dangers and complication of skin dryness; (c) causes of skin dryness and signs and symptoms of skin dryness; (d) Methods of cleansing and moisturizes skin; (e) Advantages of standardized skin care. The guidelines program was divided into six sessions lasting 20-35 minutes each. The total duration of the implementation phase of the study was 3-6 weeks. The teaching methods included brain storming, group discussions, and demonstrations. Audiovisual media, pictures, and handouts were used in addition to a guide handbook prepared by the researcher.

A post-test was administrated after eight weeks from the implementation of the guidelines program to assess the changes in participants' knowledge, practices and dry skin. The same tools used in the pretest were re-used.

IV. Statistical analysis

Data entry and statistical analysis were done using SPSS 20.0 statistical software package. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, and means and standard deviations and medians for quantitative variables. Cronbach alpha coefficient was calculated to assess the reliability of the tools through their internal consistency. Paired Quantitative continuous data were compared using the paired t test. Pearson correlation was used for assessment of the inter-relationships among scales. Statistical significance was considered at p-value < 0.05.

V. Results

Table 1 shows that the age of the studied elderly ranged between 65 and 81 years, with mean 66.66±4.77 years, and higher percentage of males (55.2%). Slightly less than three-fourths of the studied elderly (71.4%) were widow, and 36.2% of them had diploma education. The monthly income of most of the studied elderly (84%) was insufficient.

Regarding dry skin knowledge of the studied elderly pre and post skin care guidelines, **Table 2** demonstrates that all dry skin knowledge items showed highly statistical significant differences (P=0.000) except one item which was meaning of dry skin. Table 2 also indicates statistical significant improvement in total score of dry skin knowledge during the studied elderly pre and post skin care guidelines (P=0.000).

Table 3, revealed significant statistical differences in all items of skin care practices (pre-post) implementation guideline (p=0.000) such as bathing, used appropriate soap for skin care and moist and lubricate skin.

Table 4 demonstrates post skin care guidelines statistically significant improvements in overall dry skin score (P=0.000).

Table 5 demonstrates post skin care guidelines implementation statistically significant improvements in all dry skin specified symptoms (scaling, roughness, redness, and cracks fissures (SRRC)) (P=0.000).

Table 6 indicates statistically significant positive correlation between elderly's total knowledge score and their total practice score (R= 0.553) at post skin care guidelines. Concerning overall dry skin score, table 6 revealed both elderly's total knowledge score and their total practice score were negatively correlated with overall dry skin score at post skin care guidelines (R= 0.262, 0.322).

Table 1, Demographic characteristics of the studied elderly (n=105).

Items	**Frequency**	**%**
Age :		
Minimum	65	
Maximum	81	
Mean(SD)	66.66±4.77	
Gender:		
Male	58	55.2%
Female	47	44.8%
Marital status:		
Married	2	1.9%
Single	21	20.0%
Widow	75	71.4%
Divorced	7	6.7%
Educational level		
Illiterate	17	16.2%
Read & Write	21	20.0%
Diploma	38	36.2%
University	29	27.6%
Income:		
Sufficient	21	20.0%
Insufficient	84	80.0%

Table 2, Mean score difference of correct dry skin knowledge among the studied elderly (pre/post) skin care guidelines (n=105).

Items	**PRE**		**POST**		**t**	**P value**
	Mean	**SD**	**Mean**	**SD**		
Meaning of dry skin	3.01	0.73	3.06	0.81	0.49	0.62455
Signs and symptoms of dry skin	2.32	0.81	3.61	0.49	13.34	0.00000*
Danger of dry skin	2.93	0.68	3.44	0.50	6.80	0.00000*
Causes of dry skin	2.60	0.80	3.47	0.50	10.12	0.00000*
Complication of dry skin	2.68	0.73	3.29	0.45	7.56	0.00000*
Prevention of dry skin	2.35	0.64	3.63	0.49	15.61	0.00000*
Total Knowledge score	15.90	2.49	20.49	2.10	16.31	0.00000*

Table 3, Mean score difference of skin care practices of the studied elderly (pre/post) skin care guidelines (n=105).

Items	PRE		POST		t	P value
	Mean	SD	Mean	SD		
Brief shower or bath(<10 minutes) with lukewarm water	2.54	0.62	3.41	0.49	12.09	0.00000*
Use fragrance-free and botanical-free products for cleansing skin.	2.24	0.56	3.10	0.84	9.61	0.00000*
Do not use rubbing or harsh toweling for dry skin during bathing	1.77	0.42	3.06	0.23	29.02	0.00000*
Moisturizing the skin	1.34	0.48	3.46	0.50	31.05	0.00000*
Total skin care Practice score	7.90	0.82	13.02	1.22	35.51	0.00000*

Table 4, Comparison of the mean values of Overall dry skin score of the studied elderly pre and post standardized skin care guidelines (N=105).

	PRE (n=105)		**POST (n=105)**		**t**	**P value**
Item	**Mean**	**SD**	**Mean**	**SD**		
Overall dry skin score	2.93	0.86	1.04	0.68	-14.06	0.00000*

Table 5, Comparison of the mean values of Specified symptom sum score (SRRC) of the studied elderly pre and post standardized skin care guidelines (N=105).

Items	**PRE (n=105)**		**POST (n=105)**		**t**	**P value**
	Mean	**SD**	**Mean**	**SD**		
Scaling	2.94	0.81	1.34	0.68	-12.49	0.00000*
Roughness	2.92	0.84	1.15	0.70	-13.07	0.00000*
Redness	2.95	0.78	1.08	0.86	-13.42	0.00000*
Cracks fissures	2.71	0.95	1.02	0.89	-10.19	0.00000*

Table 6, Correlation between Total Knowledge score, total practice score, and Overall dry skin score of the studied elderly post skin care guidelines implementation (n=105).

Items		**Total Practice score POST**	**Overall dry skin score POST**
Total Knowledge score POST	Pearson Correlation Coefficient r	.553**	-.262**
	P value	.000	.007
Total Practice score POST	Pearson Correlation Coefficient r		-.322**
	P value		.001

VI. Discussion

In elderly Nursing Home Residents, the incidence rate of dry skin is leading cause to skin tears because skin infection. So prevention of dry skin could then generally be of higher importance than treatment [6, 18, 20]. The current study aimed to evaluate the effect standardized skin care guidelines on dry skin among elderly nursing home residents. The results of the present study showed that the minimum age was 65 year while maximum age was 81 year among studied elderly. These findings are consistent with Blume et al.[21]who studied "Age-associated skin conditions and diseases: current perspectives and future options in USA" reported that the reduced of functional capacity and increased susceptibility of the skin with development of dermatitis such as dry skin, itching, ulcers, depigmentation, wrinkles, fungal infections, as well as benign and malignant tumors are the most common skin conditions in aged populations worldwide. This is because the increase in age comes as a decrease in the flow of blood circulation as well as the stiffness of the main vessels, which contributes to a greater intensity of inflammatory reactions and reduced clearance of self and external substances deposited in the dermis.In the study conducted by Brooks et al. [5] When they studied "Skin cleansing and emolliating for older people in the United Kingdom" they found that the skin in elderly people is frequently characterized by dry skin and itching and hygiene practices are considered essential to maintaining skin integrity. As well as in the study of both *Cowdell et al* 2014[12] and *Gardiner et al* 2008[10].

The results of the current study showed improved all specified symptoms of dry skin (scaling, roughness, redness, and cracks fissures) after implementation of standardized skin care guidelines. The findings came in agreement with *Ogrin et al.[22]* who studied "Co-creating a Peer Education program to improve skin health in older people from diverse communities: An innovation in health promotion in Australia" the researcher reported that Peer education for skin health' significantly improves knowledge and daily self-care practices for older people about skin care.

Concerning the elderly practice of skin care the present study showed most of elderly people in this study sample their practices improve especially for using warm bathing after implementation of the standardized guidelines. The findings of the current study came in consistent with Guenther et al.[2] Who studied "Pathway to Dry Skin Prevention and Treatment". The researcher reported that frequent showering or bathing, especially with hot water, for long periods breaks down the lipid barriers in the skin. Also, these findings were supported by Brooks et al.[5]who studied "Skin cleansing and emolliating for older people: A quasi- experimental pilot study in UK " they reported that all testing methods of soaps with higher PH indicate that excessive exposure induces barrier damage and skin dryness followed by inflammation. The finding of the present revealed that skin moisturization practice improved among the elderly studied than before implementation guidelines. This finding was consistent with LeBlanc et al[23] who studied" Is Twice-Daily Skin Moisturizing More Effective Than Routine Care in the Prevention of Skin Tears in the Elderly Population "found that the routine skin moisturizing is recommended as one component of a prevention program for dry skin among elderly residing in long-term care facilities. A similar finding was recorded by Kottner et al.[15]who studied "The effectiveness of using a bath oil to reduce signs of dry skin: A randomized controlled pragmatic study in Germany" reported that elderly who used routine skin care improving moderate dry skin to mild.

In the study by Lopez et al.[13] who studied "Skin tear prevention and management among patients in the acute aged care and rehabilitation units in the Australian Capital Territory: a best practice implementation project in Australian" founded that using appropriate soap, bathing alternative days unless otherwise required more frequently and moisturizing dry skin as routine daily care prevent dry skin.

It was hypothesized that after implementation of standardized skin care guidelines, skin dryness in elderly nursing home residents will be reduced. This hypothesis was supported by the current study findings which revealed post skin care guidelines implementation a statically significant improvements in overall dry skin score; which indicates significant improvement of dryness among studied elderly. This indicates that implementation of the standardized skin care guidelines was effective in reducing dry skin. In accordance with the current study finding, a study in Germany conducted by *Kottar et al., (2017) [15]*revealed that structured skin care regimens are effective in reducing skin dryness in aged nursing home residents' within eight weeks.

The results of the present study indicated that the standardized skin care guidelines improved knowledge among older people about dry skin identification and the causes and preventive measures of dry skin after implementation standardized skin care guidelines. These findings are consistent with *Guenther et*

al.[2]when studied "Pathway to dry skin prevention and treatment in Germany" found that the awareness of dry skin and therefore prevention and effective treatment is limited. Similarly to the study *Garbaccio et al*.[24]who found that most of the elderly people had poor knowledge about dry skin in Brazil. In addition, elderly people neglect simple self-care tasks, such as using moisturizer on a daily basis and on cloudy days, despite the fact that they are aware of its importance.

VII. Conclusion

Based on the findings of the present study, it was concluded that the standardized skin care guidelines are effective in reducing skin dryness in aged nursing home residents. Standardized skin care guidelines are also effective in improving the elderly's skin dryness knowledge and skin care practices.

VIII. Recommendations

In the light of the current study findings, it is recommended to apply the standardized skin care guidelines in the study settings on a long term basis to test its sustainability, and in similar settings to confirm its effectiveness and for further improvements. It is recommended to replicate this study using a randomized clinical trial design in order to confirm the findings and to provide a higher level of evidence of its findings, and for detailed recommendations of skin care for this growing population.

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