

## RESEARCH ARTICLE

# Skin problems of Korean military personnel changes in the use of cosmetics and differences in preference according to different characteristics: Focused on comparison pre- and post-enlistment

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**Abstract**

**Background:** Recently, men's interest and participation in cosmetology have increased, and the number of "grooming" men who are exorbitantly investing in fashion and looks has increased, further increasing the growth potential of men's cosmetics.

**Objectives:** The purpose of this study was to analyze the skin diseases of men in their 20s and 30s in Korea, focusing on the comparison before and after enlistment, and to study the changes in cosmetic use and the difference in cosmetic preference according to the military service problem of Korean men.

**Methods:** We enrolled 450 people, after excluding 50 dishonest respondents. Statistical data processing collected with the data analysis method were analyzed using the Statistical Package for Social Science (SPSS) WIN25.0 statistical package program through data coding and cleaning.

**Results:** A total of 217 (48.2%) people preferred the cosmetic type of skin/lotion preferred by the private sector, and the cosmetic type required by the military was a complex skin lotion (48.2%) with 216 people (48.2%). All-in-one products were the most common products. The *P*-value was  $P < .001$  or more.

**Conclusion:** The results of this comprehensive study indicated skin problems of Korean military personnel changes in the use of cosmetics and differences in preference according to different characteristics focused on comparison pre- and post-enlistment was assessed.

**KEYWORDS**

grooming, men's cosmetics, skin care, skin problems, soldiers

## 1 | INTRODUCTION

Mishra et al<sup>1</sup> suggested direct grooming to maintain social cohesion with specific individuals in the group. A socially groomed individual is

often with whom the most number of benefits can be exchanged in general. This was intended for the upper layers. Mishra et al<sup>2</sup> used the social network analysis to determine whether relationships are differentiated based on the hierarchical position or not and whether the

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parent's individual identity is the most central individual identity in the group's grooming distribution. We found reciprocity among men, although it is unfair. There was no class-based affiliation among men in the group, but individual identities influenced the affiliation pattern. Montes and Santos<sup>3</sup> reported that men's interest and participation in cosmetology have increased over the last few years. Skin cleansing and moisturizing, sweat and body odor control, and scalp and hair care are associated with social status and professional development in men, particularly when personal image is more important than ever. Facial hair management or removal is now an integral part of men's "habits and practices" in all regions and socioeconomic classes. According to Shiel,<sup>4</sup> data from the 2011 Euromonitor show that the 2009 to 2010 global men grooming category grew by approximately 9% year-on-year, with men generously investing in fashion and looks. The meaning of "grooming" is expanding, and the growth potential of men's cosmetics is further increasing. In 2019, the men's cosmetics market in the Republic of Korea was valued at approximately 1 billion dollars (1.2 trillion won), and in 2020, approximately 1.2 billion dollars (1.4 trillion won). Accordingly, men's beauty markets are expected to grow continuously. According to Chang Milan (2019), in the trend analysis of men's cosmetics, if they simply stopped at the skin and lotion stages in the past, have recently been willing to invest boldly to manage their looks. Domestic and foreign companies have also announced new lines of cosmetics for men at these openings.<sup>5</sup>

According to de Lacerda et al.,<sup>6</sup> there was an increasing demand for topical products that could prevent aging and provide cosmetic improvements to men's skin. Cosmetic ingredients that require the development of a rational approach for men's cosmetics based on the anatomical and physiological characteristics of men's skin can undo changes caused by the sun. Applying cosmetic treatments to men's grooming routines increases compliance. They reported that the shaving routine needed more men's cosmetics. In addition, according to the Food and Drug Safety Department Drug Integrated Information System,<sup>7</sup> acne is activated by androgens, which increases during puberty and enlarges the sebaceous glands of the skin. Acne usually occurs in the early teens, but symptoms in early twenties can be severe and usually disappear after a few years without treatment. Therefore, it is important to provide skin care to prevent normal acne and be interested in acne treatment.

Pilar Matud<sup>8</sup> reported that self-esteem and social support are such that men with high self-esteem and social support have higher psychological health ratings, higher self-esteem, and less psychological distress. As an important predictor of men's health, these findings discuss the impact on men's health and well-being. In addition, in MacLeish<sup>9</sup> Armor and anesthesia: exposure, feeling, and the soldier's body, the advanced weapons, armor, and military medicine provided by the US military to many civilians are images of deadly ability and physical invincibility. However, soldiers often associate modern war life-sustaining techniques with various emotions, from the practical duality of ultraviolet (UV) irradiation to the seriously unstable vulnerability, to the military personnel themselves. Training, combat environments, protective devices, and weapons face serious discomfort and danger, and there are emotional physical difficulties that exist in

military obligations and complex tensions that must be continued. In addition, Wolf et al.<sup>10</sup> participated in outdoor exercise and sports with military personnel, where overexposure to UV rays (UVR) from the sun is associated with adverse health effects, including, but not limited to, an increased risk of skin cancer. People often spend a lot of time outdoors in harsh UVR environments; therefore, there is a high risk of adverse health effects from UVR exposure, ignoring sun protection practices, and being exposed to these risks. The risk of effects of negative UVR is high because people do not understand it. Millar et al.<sup>11</sup> Skin and soft tissue infections (SSTIs) cause infectious disease morbidity in the military, as shown in a study of preventive opportunities and obstacles for military skin and soft tissue infections. In particular, SSTI prophylaxis in high-risk groups associated with methicillin-resistant *Staphylococcus aureus* (MRSA) infection is needed. Soldiers have experienced intense long-term exposure to *S. aureus*, the main cause of SSTI, and the burden of *S. aureus* colonization and SSTI is particularly high for military trainees.

In Rossi,<sup>12</sup> the number of men looking for beauty cohorts and mediations in men's beauty dermatology is increasing rapidly, and dermatologists are evolving around men's cosmetics and surgery. It is necessary to recognize the demographics and understand the biological, anatomical, and psychological aspects to distinguish between male and female cohorts. Cosmetic dermatology uses the same techniques used by women, developed for application in men. Therefore, the use of our cosmetic toolbox may differ among men in terms of the technique and dose, and the condition of male dermatological cosmetology must be confirmed. Previous study showed effects of buffers of different pH and composition on the murin skin barrier, epidermal proliferation, differentiation, and inflammation (Proksch, 2019) and formulation of topical products for effective acidification in pathological skin conditions.<sup>13</sup> Montes et al.<sup>3</sup> also suggested that most men accept or are interested in cosmetology, but cost and time play a major role in their decisions. The cosmetic provider said it needed marketing activities and suggestions to increase participation in minimally invasive cosmetology treatments.

Therefore, in this study, we focused on comparisons before and after enlistment regarding changes in the use of cosmetics and differences in preference according to characteristics of Korean military personnel's skin problems. We will analyze the skin problems of men in their 20s and 30s in South Korea and contribute to the development of PX men's cosmetics for soldiers and the global cosmetics market for men.

## 2 | SUBJECTS AND METHODS

This survey conducted an offline by face-to-face survey for 2 weeks from November 1 to November 15, 2020, and the subjects of this study were men in their 20s and 30s in Chuncheon city, Gangwon-do, Republic of Korea. All participants signed an informed consent form and could cancel their participation at any time during the study, in accord with the Helsinki II declaration. Since the minimum sample size was 486 based on the population 2000, 95% confidence level, and tolerance of 0.05, a total of 500 people were surveyed in this study.

Statistical processing of data collected with the data analysis method were analyzed using the Statistical Package for Social Science (SPSS) WIN25.0 statistical package program through the process of data coding and cleaning. To investigate, Cronbach's value was calculated through reliability analysis. The independent sample *t*-test and member placement to investigate differences in skin awareness and interest, personal skin care behavior and use, personal cosmetic purchasing behavior, and military skin care behavior according to the characteristics of the survey subjects. Analysis of variance (One-way ANOVA) was performed, and the post-hoc test was performed with Scheffe Fourth, simple regression analysis was performed to examine the effects of skin awareness and interest on skin care behavior and usage, cosmetics purchasing behavior, and skin care behavior. In this study, we identified at significance levels  $P < .05$ ,  $P < .01$ ,  $P < .001$ .

### 3 | RESULTS

#### 3.1 | Skin awareness and interest

The results of the descriptive statistics and reliability analysis of the skin awareness and interest scale are shown in Table 1. The average value of "I think there is a relationship between the use of cosmetics and skin improvement" was the highest at  $4.03 \pm 1.13$ , and the average value of "I'm worried because of hot flashes" was  $1.83 \pm 1.15$ . It became the lowest. Cronbach's alpha, calculated for reliability verification, appeared at 0.862 with a reference value of 6 or more, and the degree of internal agreement among question items was very high.

#### 3.2 | Private skin care behavior and reality

The results of the descriptive statistics and reliability analysis of private skin care behavior and fact-finding scales are shown in Table 2.

The average value of "using cleansing products in the private sector" was the highest at  $3.93 \pm 1.38$ , and the average value of "making up in the private sector" was the lowest at  $1.59 \pm 1.03$ . Cronbach's alpha calculated for reliability verification was 0.768 and appeared with a reference value of 6 or more, and the degree of internal agreement among question items was very high.

#### 3.3 | Private cosmetics purchasing behavior

The results of the descriptive statistics and reliability analysis of the Private Cosmetics Purchasing Behavior Scale are shown in Table 3. The average value of "passes that mainly purchased cosmetics in the private sector are offline cosmetics departments" was the highest at  $3.07 \pm 1.37$ , and the average value of "passes that mainly purchased cosmetics in the private sector are online internet sites" was the lowest at  $2.31 \pm 1.39$  points. Cronbach's alpha, calculated for reliability verification, appeared at 0.614 with a reference value of 6 or more, and the degree of internal agreement among question items was very high.

#### 3.4 | Military skin care behavior

The results of the descriptive statistics and reliability analysis of the Military Skin Care Behavior Scale are shown in Table 4. The average value of "the military needs cleansing products for the use of camouflage cream" is the highest at  $4.68 \pm 0.67$ , and the average value of "the cosmetics needed by the military and the cosmetics needed by the private sector are different" is the lowest at  $3.13 \pm 1.25$ . Cronbach's alpha, calculated for reliability verification, appeared at 0.752 with a reference value of 6 or more, and the degree of internal agreement among question items was very high.

**TABLE 1** Skin perception and attention

Diagnosis	M	SD	Min	Max	Cronbach's $\alpha$
I want to get a skin examination.	3.77	1.36	1.0	5.0	0.862
I'm Interest in skin and beauty.	3.49	1.24	1.0	5.0	
I'm worried about dry skin.	3.17	1.27	1.0	5.0	
I'm worried about skin elasticity and wrinkles.	2.77	1.29	1.0	5.0	
I'm worried about facial flushing.	1.83	1.15	1.0	5.0	
I'm worried about blemishes such as spots, freckles, and age spots.	2.31	1.40	1.0	5.0	
I'm worried about excessive sebum secretion and acne.	3.27	1.45	1.0	5.0	
I'm worried about my dull skin tone.	2.58	1.39	1.0	5.0	
I'm worried about body odor.	2.17	1.22	1.0	5.0	
I'm worried about my pores.	3.01	1.45	1.0	5.0	
I think there is a relationship between the use of cosmetics and skin improvement.	4.03	1.13	1.0	5.0	
Total	2.95	0.85	1.0	5.0	

**TABLE 2** Private skin care behavior and actual condition

Diagnosis	M	SD	Min	Max	Cronbach's $\alpha$
The private sector has made efforts to solve skin problems.	3.30	1.36	1.0	5.0	0.768
I Used sunscreen in the private sector.	2.84	1.45	1.0	5.0	
I did my makeup in the private sector.	1.59	1.03	1.0	5.0	
The private sector used cleansing products.	3.93	1.38	1.0	5.0	
Total	2.92	1.01	1.0	5.0	

**TABLE 3** Private cosmetics purchasing action

Diagnosis	M	SD	Min	Max	Cronbach's $\alpha$
I bought cosmetics directly from the private sector.	2.99	1.62	1.0	5.0	0.614
In the private sector, cosmetics were purchased by mothers, girlfriends, or acquaintances.	2.71	1.41	1.0	5.0	
The main route for purchasing cosmetics in the private sector is through online Internet sites.	2.31	1.39	1.0	5.0	
The main route for purchasing cosmetics in the private sector is offline cosmetics stores.	3.07	1.37	1.0	5.0	
Total	2.77	0.99	1.0	5.0	

**TABLE 4** Army skin care behavior

Diagnosis	M	SD	Min	Max	Cronbach's $\alpha$
In the military, there are a lot of outdoor activities, so sunscreen is necessary.	4.34	0.93	1.0	5.0	0.752
The military needs an all-in-one product that can be used quickly because time is short.	4.31	0.99	1.0	5.0	
In the military, there is a lot of exercise, so sebum control products are needed.	4.10	1.05	1.0	5.0	
The army needs cleansing products by using camouflage cream.	4.68	0.67	1.0	5.0	
The army also needs skin care.	4.66	0.67	1.0	5.0	
In the military, skin care helps improve military life and social adaptability after discharge.	4.34	0.99	1.0	5.0	
Cosmetics required by the military and cosmetics required by civilians are different.	3.13	1.25	1.0	5.0	
Total	4.22	0.61	1.0	5.0	

### 3.5 | Characteristics of survey subjects

Table 5 shows the characteristics of survey subjects. Looking at the ages of the surveyed people, 423 people aged 20 to 23 (94.0%) showed a higher proportion compared to 27 people aged 24 to 27 (6.0%), and the average income before enlistment was less than 1 million won. The largest number was 283 (62.9%), 93 people (20.7%) from 1 million won to less than 2-million-yen, 51 people (11.3%) from 2 million won to less than 3.5 million yen, and 23 people from 3.5 million yen (11.3%).

### 3.6 | Evaluation due to changes in cosmetic use

The evaluation according to changes in the use of cosmetics is shown in Table 6. Regarding men's cosmetic brands preferred by the private sector, Uros was the most popular (225, 50.0%), followed by Hellaom (121, 26.9%), Lap series (45, 10.0%), Biotherm Homme (41, 9.1%), and Laneige Homme (18, 4.0%), and the most preferred cosmetic types in the private sector were skin/lotion (217, 48.2%), and skin lotion combined use (all-in-one product; 126, 28.0%), cleansing products (86, 19.1%), sunscreen (13, 2.9%), and color cosmetics (8, 1.8%).

**TABLE 5** Characteristic of subject to investigation (N = 450)

Diagnosis		N	%
Age	20-23 years old	423	94.0
	24-27 years old	27	6.0
Average income before enlistment	Less than 1 million won	283	62.9
	More than 1 million won to less than 2 million won	93	20.7
	More than 2 million won to less than 3.5 million won	51	11.3
	Over 3.5 million won	23	5.1
Occupation before enlistment	Professional/technical jobs	40	8.9
	Office/management positions	14	3.1
	Self-employment	10	2.2
	Sales/service jobs	65	14.4
	Student	321	71.3
Academic background	High school graduation	139	30.9
	To attend or graduate from a junior college	99	22.0
	While attending a four-year university	200	44.4
	A four-year college graduate	12	2.7
Residence	Seoul	97	21.6
	Gyeonggi-do	161	35.8
	Gangwon-do	42	9.3
	Chungcheong-do	38	8.4
	Jeolla-do	32	7.1
	Gyeongsang-do	73	16.2
	Etc	7	1.6
Marital status	Single	446	99.1
	Married	4	0.9
Smoking status	Yes	199	44.2
	No	251	55.8
Drinking status	Yes	352	78.2
	No	98	21.8

**TABLE 6** Preference according to changes in cosmetics use (N = 450)

Diagnosis		N	%
Men's cosmetics brand preferred by the private sector	Rap series	45	10.0
	Biotherm homme	41	9.1
	Hera homme	121	26.9
	Laneige homme	18	4.0
	Uros	225	50.0
The types of cosmetics favored by the private sector	Individual skin/lotion	217	48.2
	Skin lotion combined (all-in-one product)	126	28.0
	Sunscreen	13	2.9
	Cleansing product	86	19.1
	Color cosmetics	8	1.8
Types of cosmetics the army needs	Individual skin/lotion	77	17.1
	Skin lotion combined (all-in-one product)	217	48.2
	Sunscreen	74	16.4
	Cleansing product	82	18.2

### 3.7 | Differences in skin awareness and interests according to the characteristics of the survey subjects

Table 7 shows the results of an independent-samples *t*-test and member placement ANOVA to investigate the differences in skin awareness and interest according to the characteristics of the survey subjects. For ages 24 to 27, the average was  $3.01 \pm 0.78$ , which was higher than  $2.94 \pm 0.85$  for 20 to 23 years, but there was no significant difference before enlistment. The average income of 3.5 million won or more was the highest at  $3.14 \pm 1.04$ , and that of 1 million won or more and less than 2 million yen was the lowest at  $2.84 \pm 0.85$ , showing no significant difference.

### 3.8 | Differences in private skin care behavior and actual usage according to the characteristics of survey subjects

The results of an independent-sample *t*-test and a member placement ANOVA to investigate the difference between private skin care

behavior and actual usage according to the characteristics of the survey subjects are shown in Table 8. For ages 24 to 27, the average was  $2.96 \pm 1.16$ , which was higher than  $2.91 \pm 1.00$  for 20 to 23 years, but there was no significant difference and the pre-enlistment average. There was no significant difference, with income of 3.5 million won or more being the highest at  $3.39 \pm 1.01$  and 1 million won or more and less than 2 million yen being the lowest at  $2.85 \pm 1.05$ .

### 3.9 | Differences in private cosmetics purchasing behavior according to the characteristics of the survey subjects

Table 9 shows the results of an independent-sample *t*-test and a member placement ANOVA to investigate the difference in private cosmetics purchasing behavior according to the characteristics of the survey subjects. For ages 20 to 23, the average was  $2.78 \pm 0.99$ , which was higher than  $2.70 \pm 0.94$  for 24 to 27, but there was no significant difference before enlistment. The average income of 3.5

**TABLE 7** Differences in skin perception and attention depending on the characteristics of the person surveyed

Diagnosis		N	Mean	SD	t/F	P	Scheffe
Age	20-23 years old	423	2.94	0.85	-0.408	.683	-
	24-27 years old	27	3.01	0.78			
Average income before enlistment	Less than 1 million won	283	2.97	0.83	1.029	.380	-
	More than 1 million won to less than 2 million won	93	2.84	0.85			
	More than 2 million won to less than 3.5 million won	51	2.91	0.86			
	Over 3.5 million won	23	3.14	1.04			
Occupation before enlistment	Professional/technical jobs	40	2.78	0.62	0.924	.425	-
	Office/management positions	14	2.78	0.97			
	Self-employment	10	3.19	0.73			
	Sales/service jobs	65	2.89	0.93			
	Student	321	2.98	0.85			
Academic background	High school graduation	139	2.83	0.89	1.265	.286	-
	To attend or graduate from a junior college	99	3.01	0.83			
	While attending a four-year university	200	2.99	0.84			
	A four-year college graduate	12	2.98	0.72			
Residence	Seoul	97	3.04	0.81	0.730	.625	-
	Gyeonggi-do	161	2.85	0.88			
	Gangwon-do	42	2.95	0.82			
	Chungcheong-do	38	3.04	0.80			
	Jeolla-do	32	3.04	0.79			
	Gyeongsang-do	73	2.93	0.91			
	Etc	7	3.13	0.81			
Marital status	Single	446	2.95	0.84	0.324	.767	-
	Married marriage	4	2.66	1.78			
Smoking status	Yes	199	2.99	0.86	1.041	.298	-
	No	251	2.91	0.84			
Drinking status	Yes	352	2.97	0.83	1.313	.190	-
	No	98	2.85	0.90			

**TABLE 8** Differences in the behavior and usage of private skin care according to the characteristics of the subjects surveyed

Diagnosis		N	Mean	SD	t/F	P	Scheffe
Age	20-23 years old	423	2.91	1.00	-0.254	.799	-
	24-27 years old	27	2.96	1.16			
Average income before enlistment	Less than 1 million won	283	2.87	0.97	2.473	.061	-
	More than 1 million won to less than 2 million won	93	2.85	1.05			
	More than 2 million won to less than 3.5 million won	51	3.07	1.08			
	Over 3.5 million won	23	3.39	1.01			
Occupation before enlistment	Professional/technical jobs	40	3.01	1.08	0.146	.965	-
	Office/management positions	14	2.98	1.09			
	Self-employment	10	2.95	1.06			
	Sales/service jobs	65	2.86	1.00			
	Student	321	2.91	1.00			
Academic background	High school graduation	139	2.86	1.09	0.623	.668	-
	To attend or graduate from a junior college	99	2.94	1.00			
	While attending a four-year university	200	2.96	0.94			
	A four-year college graduate	12	2.63	1.26			
Residence	Seoul	97	2.87	1.07	0.308	.933	-
	Gyeonggi-do	161	2.92	1.03			
	Gangwon-do	42	3.07	0.90			
	Chungcheong-do	38	2.78	1.05			
	Jeolla-do	32	2.89	0.84			
	Gyeongsang-do	73	2.95	1.04			
	Etc	7	2.96	0.74			
Marital status	Single	446	2.92	1.01	1.575	.116	-
	Married	4	2.13	0.92			
Smoking status	Yes	199	3.02	0.95	1.901	.058	-
	No	251	2.84	1.05			
Drinking status	Yes	352	3.00	0.96	3.301	.001***	-
	No	98	2.59	1.12			

Note: \*\*\* $P < .001$ .

million won or more was the highest at  $3.11 \pm 0.85$ , and the average income of 1 million won or more and less than 2 million yen was the lowest at  $2.64 \pm 0.95$ , which was not a significant difference. If the pre-enlistment profession was self-employed, there was no significant difference, with an average of  $2.85 \pm 0.73$ , the highest, and a clerical/manager  $2.52 \pm 0.94$ , and 4 years of education.

### 3.10 | Differences in military skin care behavior according to the characteristics of the survey subjects

The results of an independent-sample *t*-test and one-way analysis of variance (ANOVA) to investigate differences in military skin care behavior according to the characteristics of the subjects are shown in Table 10. For ages 20 to 23, the average was  $4.22 \pm 0.60$ , which was higher than  $4.17 \pm 0.66$  for 24 to 27 years, but there was no significant difference before enlistment. The average income of less than

1 million won was the highest at  $4.24 \pm 0.61$ , and the average income of 1 million won or more and less than 2 million yen was the lowest at  $4.16 \pm 0.59$ , and there was no significant difference. If the pre-enlistment occupation was self-employed, there was no significant difference, with an average of  $4.40 \pm 0.59$ , the highest, and a professional/technical  $4.06 \pm 0.61$ , and academic background of 4.

### 3.11 | Effect of skin awareness and interest on private sector skin care behavior and actual usage

The results of a simple regression analysis to investigate the effects of skin awareness and interest on private-sector skin care behavior and actual usage are shown in Table 11. The explanatory power of the model was approximately 28.1% ( $R = 0.281$ ), indicating that the model was suitable ( $F = 174.797$ ,  $P < .001$ ). Skin awareness and interest ( $B = 0.630$ ,  $P < .001$ ) had a significant static (+) effect on private

**TABLE 9** Differences in the behavior of purchasing private cosmetics according to the characteristics of those surveyed

Diagnosis		N	Mean	SD	t/F	P	Scheffe
Age	20-23 years old	423	2.78	0.99	0.365	.715	-
	24-27 years old	27	2.70	0.94			
Average income before enlistment	Less than 1 million won	283	2.77	1.00	1.524	.207	-
	More than 1 million won to less than 2 million won	93	2.64	0.95			
	More than 2 million won to less than 3.5 million won	51	2.85	1.02			
	Over 3.5 million won	23	3.11	0.85			
Occupation before enlistment	Professional/technical jobs	40	2.77	0.98	0.470	.758	-
	Office/management positions	14	2.52	0.94			
	Self-employment	10	2.85	0.73			
	Sales/service jobs	65	2.67	1.00			
	Student	321	2.80	1.00			
Academic background	High school graduation	139	2.65	1.03	2.577	.080	-
	To attend or graduate from a junior college	99	2.67	1.09			
	While attending a four-year university	200	2.92	0.89			
	A four-year college graduate	12	2.69	1.07			
Residence	Seoul	97	2.81	0.90	0.463	.836	-
	Gyeonggi-do	161	2.70	1.03			
	Gangwon-do	42	2.95	0.98			
	Chungcheong-do	38	2.68	1.02			
	Jeolla-do	32	2.87	1.08			
	Gyeongsang-do	73	2.78	1.00			
	Etc	7	2.75	0.90			
Marital status	Single	446	2.77	0.99	-0.337	.736	-
	Married	4	2.94	1.30			
Smoking status	Yes	199	2.85	0.95	1.566	.118	-
	No	251	2.71	1.02			
Drinking status	Yes	352	2.84	0.97	2.622	.009**	-
	No	98	2.54	1.04			

Note: \*\* $P < .01$ .

skin care behavior and actual use. Therefore, it is interpreted that the positive behavior and frequency of use for skin care in the private sector (before enlistment) increases with an increase in skin awareness and interest.

### 3.12 | Impact of skin awareness and interest on cosmetics purchasing behavior from the private sector

The results of a simple regression analysis to investigate the effects of skin awareness and interest on cosmetics purchasing behavior in the private sector are shown in Table 12. The explanatory power of the model was approximately 20.1% ( $R = 0.201$ ), indicating that the model was suitable ( $F = 112.365$ ,  $P < .001$ ). Skin awareness and interest ( $B = 0.522$ ,  $P < .001$ ) had a significant static (+) effect on purchasing behavior in private cosmetics. Therefore, it is interpreted that the

behavior of purchasing cosmetics in the private sector increases as the person's skin awareness and interest increase.

### 3.13 | Effects of skin awareness and interest on military skin care behavior

The results of a simple regression analysis to investigate the effects of skin awareness and interest on skin care behavior in the military are shown in Table 13. The explanatory power of the model was approximately 20.1% ( $R = 0.201$ ), indicating that the model was suitable ( $F = 120.009$ ,  $P < .001$ ). Skin awareness and interest ( $B = 0.328$ ,  $P < .001$ ) had a significant static (+) effect on skin-care behavior in the military. Therefore, it is interpreted that skin care behavior in the military increases as the person's skin awareness and interest increase.



**TABLE 10** Differences in military skin care behavior according to the characteristics of those surveyed

Diagnosis		N	Mean	SD	t/F	P	Scheffe
Age	20-23 years old	423	4.22	0.60	0.416	0.678	-
	24-27 years old	27	4.17	0.66			
Average income before enlistment	Less than 1 million won	283	4.24	0.61	0.517	0.671	-
	More than 1 million won to less than 2 million won	93	4.16	0.59			
	More than 2 million won to less than 3.5 million won	51	4.23	0.58			
	Over 3.5 million won	23	4.19	0.65			
Occupation before enlistment	Professional/technical jobs	40	4.06	0.61	1.099	0.357	-
	Office/management positions	14	4.16	0.52			
	Self-employment	10	4.40	0.59			
	Sales/service jobs	65	4.20	0.59			
	Student	321	4.24	0.61			
Academic background	High school graduation(a)	139	4.14	0.56	3.362	0.019*	d < a,b < c
	To attend or graduate from a junior college(b)	99	4.24	0.63			
	While attending a four-year university(c)	200	4.30	0.60			
	A four-year college graduate(d)	12	3.87	0.77			
Residence	Seoul	97	4.26	0.63	0.301	0.936	-
	Gyeonggi-do	161	4.17	0.64			
	Gangwon-do	42	4.22	0.56			
	Chungcheong-do	38	4.23	0.67			
	Jeolla-do	32	4.27	0.60			
	Gyeongsang-do	73	4.25	0.51			
	Etc	7	4.27	0.47			
Marital status	Single	446	4.23	0.60	1.688	0.092	-
	Married	4	3.71	0.95			
Smoking status	Yes	199	4.30	0.55	2.304	0.022*	-
	No	251	4.16	0.64			
Drinking status	Yes	352	4.24	0.61	1.512	0.131	-
	No	98	4.14	0.60			

Note: \* $P < .05$ .

**TABLE 11** The effect of skin perception and attention on private skin care behavior and actual condition in the private sector

Dependent variable	Independent variable	Unstandardized coefficient		standardized coefficient	t	R <sup>1</sup>	F
		B	SE	$\beta$			
Private skin care behavior and actual condition	(Constant)	1.059	0.146		7.249	0.281	174.797
	Skin perception and attention	0.630	0.048	0.530	13.221		

## 4 | DISCUSSIONS

Individuals in social primates use various tactics to compete for dominance. The optimal combination of these behaviors can vary between men who see a dominant “style” that reflects their tendency to use cooperative or enhanced dominance tactics. To achieve the alpha state, small males need to invest more time and energy in grooming to

compensate for their reduced size. The contact attack rate and rate of charge display are consistent with this prediction, suggesting that each man had a different dominance “style.”<sup>14</sup> In a social grooming study of Assam Macaque (*Macaca assamensis*), based on a sense of social solidarity, women are more often than men among long-term residents of this forest focal group groom each other or adolescents. In contrast, males groomed females more often and for a longer

**TABLE 12** Effects of skin perception and attention on private cosmetics purchasing action in the private sector

Dependent variable	Independent variable	Unstandardized coefficient		standardized coefficient	t	R <sup>1</sup>	F
		B	SE	$\beta$			
Private cosmetics purchasing action	(Constant)	1.233	0.151		8.164	0.201	112.365
	Skin perception and attention	0.522	0.049	0.448	10.600		

**TABLE 13** Effects of skin perception and attention on skin care behavior in the army

Dependent variable	Independent variable	Unstandardized coefficient		standardized coefficient	t	R <sup>2</sup>	F
		B	SE	$\beta$			
Army skin care behavior	(Constant)	3.256	0.092		35.503	0.211	120.009
	Skin perception and attention	0.328	0.030	0.460	10.955		

period, while adolescents groomed younger people more often than those who groomed both male and female boys. He has groomed his seniors for a longer period and concludes that grooming works to build and maintain familiar social cohesion rather than a specific mechanism for mating or other specific rewards in terms of service or support.<sup>15</sup> Men's cosmetics is a fast-growing field in the beauty industry. Gender publications are being reviewed using male facial anatomy, massage, and minimally invasive esthetic procedures. Men also show poor behavior that can accelerate aging, such as high smoking rates and increased UVR, with low use of preventive health care services.<sup>16</sup> Men's cosmetics market is still underdeveloped. Women accept skin care as part of their general health, but this concept has not gained widespread acceptance by men. Shaving can be the most beneficial thing that men generally perform, perhaps because of their skin appearance, and can be a grooming event and cause anti-aging cosmetics to be uninteresting; there are also many physiological differences between male and female skin, and males do not require moisturizing and photoprotection.<sup>17</sup> Medical cosmetology with men's cosmetics has been ignored in past dermatological studies but has received more attention. As men change their habits and become more prone to cosmetic use, dermatologists are required to seek expert advice on the efficacy and safety of men's skin cosmetics and the anatomy of men's and women's skin. Physical and physiological differences require research on certain environmental stressors that affect men's skin, particularly shaving-related beauty practices, product use, and protective cosmetics.<sup>18</sup> A comprehensive understanding of men, such as anatomy, facial aging, and cosmetic problems, requires effort for normal cosmetologic effects.<sup>19</sup> Men are interested in reducing signs of aging while maintaining a masculine appearance. Maintenance of the scalp is the main concern for men. They are also interested in reducing sagging in his eyes.<sup>20</sup>

To date, there has been no evaluation of the basic training that international review and service members consider it useful from their

own perspective for training in mental health resilience. To develop relevant resilience training for NATO countries, it showed the types of demands faced by new hires and coping strategies used to overcome these demands.<sup>21</sup> Skin diseases have had a significant impact on the health of soldiers dispatched throughout history. Historically, there has been a high prevalence of skin diseases among the US military personnel.<sup>22</sup> In addition, there is a high possibility of diving injuries during special operations missions in harsh environments. Diving is often used in Navy Special Warfare and is, therefore, highly associated with special operations. Early livedo skin changes in cutis marmorata, also known as skin gum apbyeon (DCS), appear temporarily.<sup>23</sup> For soldiers who have completed military training, returned to society and adapted, skin care to manage themselves is very important. It is important to understand the problems associated with the removal of men's skin and face, particularly facial hair, and dermatologists must become accustomed to cosmetology and products. However, problems with men's beauty needs and practices have been largely ignored in dermatology and scientific literature. Due to subtle but important differences, the cosmetics industry must research and design products to meet the needs of these men.<sup>4</sup>

Therefore, in this study, we analyzed the skin problems of men in their 20s and 30s in South Korea and attempted to study changes in cosmetic use and purchasing behavior, focusing on the comparison before and after enlistment Table 1. A study on health risks and the adoption of personal protective equipment during cotton harvesting in Pakistan showed interest in health costs and the skin of adolescent and elderly cotton harvesters.<sup>24,25</sup> It was concluded that men are also interested in using cosmetics and improving their skin. Acne-prone skin is characterized by more oil than other skin types. Therefore, it is important to select cosmetics with relatively low oil content. Acne patients are few, and it is best to choose and use products that are irritating, oil-free, low in oil, non-comedogenic when empty, and non-acnegenic. You should also wash your face with a mild facial cleanser

twice daily and be sure to use acne skin moisturizers to protect the skin barrier.<sup>7</sup> In addition, skin trouble spots are often observed in Indian men. The main causes in men were sun exposure and family history, with male stains sharing the same clinical histopathological characteristics as the rare million females but definitely less than females Tables 2 and 4.<sup>26</sup> The quality of life of military personnel is the ability to participate in professional activities, depending on the state of mind during military service. It sets a quality-of-life category that is important for the adaptation of military personnel in military service.<sup>27</sup> A questionnaire survey of 1062 of the 2500 military personnel (42%) who participated in desert training in Port Irwin, California, in September 1983, observed the phenomenon of herpes labia (RHL) and lip separation for 3 weeks. It was for a 4-week education period. Recurrent crypts were found in 46 subjects (4%) through observations and interviews regarding complexion, gender, lip protectant use, age, and time spent outdoors. These findings strongly support the use of lip protectants during long-term exposure to hot and dry climates.<sup>28</sup> Community-related methicillin-resistant *Staphylococcus aureus* (CA-MRSA) induces skin and soft tissue infections (SSTIs) in military recruits.<sup>29</sup> There are also cases of allergic contact dermatitis due to military camouflage Table 6.<sup>30</sup> Regarding the type of cosmetics preferred by the private sector in the evaluation survey due to changes in the use of cosmetics, there were 217 individuals (48.2%), and the number of cosmetics required by the military was the highest for 217 people (48.2%) who also used skin lotion (all-in-one product). This is confirmed by the military skin care behavior in Table 4. Sunscreens can provide pigmentation and a level of protection similar to that of the skin. It depends on the labeled UV blocking factor (SPF), which in turn depends on how well the sunscreen is applied.<sup>31</sup> Hair damage caused by sunlight, particularly UVR, is difficult to avoid in daily life. Concerns about the effects of UVR on hair have recently emerged.<sup>32</sup> Sun Protection Interventions for Highway Workers Men's Protection Cognitive and Behavioral UV images and studies on the long-term effects of skin cancer information also show that skin cancer risk is at UV exposure levels. It has been reported to increase in older men and outdoor workers.<sup>33</sup> In men's cosmetics research, a rational approach for men's cosmetics is to review the skin gender-specific literature and determine men's skin needs, after which cosmetics can meet these requirements. The marketing of men's skin care products is evolving, complex, and requires further research.<sup>6</sup> Research on men's cosmetics must be continued. However, the limitation of this study is that the survey was conducted only with trainees in some areas of the Republic of Korea, and there were few trees. The reason was that it was difficult to proceed with the investigation of military personnel because of coronavirus disease. Therefore, in subsequent research, this researcher plans to continuously study the recognition of custom-made cosmetics, and the possibility of developing custom PX products centered on male military trainees in their 20s and 30s in the Republic of Korea.

## 5 | CONCLUSIONS

The results of this comprehensive study indicated skin problems of Korean military personnel changes in the use of cosmetics and

differences in preference according to different characteristics focused on comparison pre- and post-enlistment was assessed. We showed that there is a need for continuous research on the development of men's cosmetics for the military and the global men's cosmetics market, which are still insufficient according to the usage environment.

## CONFLICT OF INTEREST

The authors declare there is no conflict of interest.

## AUTHOR CONTRIBUTIONS

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All authors have read and approved the final version of the manuscript.

Jinkyung Lee had full access to all of the data in this study and takes complete responsibility for the integrity of the data and the accuracy of the data analysis.

## TRANSPARENCY STATEMENT

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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