

International journal of  
**crisis & safety**

**Vol. 6 No. 3**

**<Index>**

1. A Study on the Relationship Between the Women College Students' Caring for Appearance and Make-Up Behaviors for Beauty Salon Startups Amidst the COVID-19 CRISIS.

**/ Jungsoon Choi, Inseog Jo, Jiyoung Seo**

2. The Relationship Between Stress, Adaptation to College Life, and Quality of Life for Preschool Teachers During the COVID-19 CRISIS.

**/ Guteak Bae, Soonsun Park, Youngmi Jin, Jihye Lee**

3. North Korean Refugees SAFETY: South Korean Security Police to Verify the Difference in Empowerment, Working Periods.

**/ Sungbae Jung, Chiyoung Lee, Sunggu Jo**

4. Current Status of COVID-19 Outbreak and Vaccination in the Republic of Korea.

**/ Myoungryu Kim, Jueun Kwon, Boksil Hong**

5. The Effect of Integral Movement Therapy Program with the Marian Chase Technique on Peer Relationship and Behavior of Deviation of the Students with Autism Spectrum Disorder for SAFETY.

**/ Sunghee Koh**

6. A Study on SAFETY Vegetable Protein Intake from Fat and Cholesterol.

**/ Jeongryeol Bae, Hyunah Kim**

7. Probing the Relationship between Satisfaction with FLEXIBLE-WORK Arrangement and Performance: With a Focus on the Moderating Effect of Organizational Commitment.

**/ Yongjin Sa**

Publisher: J-INSTITUTE  
ISSN: 2189-7603

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: 20t9dodo@naver.com

DOI Address:  
dx.doi.org/10.22471/crisis.2021.6.3.01

© 2021 J-INSTITUTE

## A Study on the Relationship Between the Women College Students' Caring for Appearance and Make-Up Behaviors for Beauty Salon Startups Amidst the COVID-19 CRISIS

Jungsoon Choi<sup>1</sup>

Yewon Arts University, Yangju, Republic of Korea

Inseog Jo<sup>2</sup>

Yewon Arts University, Yangju, Republic of Korea

Jiyoung Seo<sup>3\*</sup>

Yewon Arts University, Yangju, Republic of Korea

### Abstract

**Purpose:** The beauty industry quenches the basic human needs, and it may also be said that it is a necessary startup in the present time when appearance is a form of competitiveness. The purpose of this study is to examine the relationship between caring for appearance and make-up behaviors of women college students for the beauty salon startups targeting women college students amidst the ongoing COVID-19 crisis.

**Method:** As for the research method, the questionnaire method was used for women college students in Seoul and Gyeonggi-do. The questionnaire was consisted of caring for appearance, make-up behaviors, and demographic variables, while frequency, percentage, and average were calculated to discover the demographic characteristics of the research subjects, and to identify and understand the relationship between caring for appearance and make-up behaviors, the multiple regression analysis was performed to examine the Pearson's moment correlation and causal relationship.

**Results:** As a result of the analysis, first, caring for appearance was derived as such factors including focus on appearance in trend, self-development, and sexual attractiveness, while make-up behaviors were derived as such five factors including prevalence, conformity, subjectivity, instrumentality, and ostentation. Second, all sub-factors of the motive of caring for appearance of women college students turned out to have a statistically significant, positive correlation with all sub-factors of the make-up behaviors. Third, the motive for caring for appearance turned out to have a statistically significant effect on the sexual attractiveness and focus on appearance of the make-up behaviors across all sub-factors, and the factors of prevalence and instrumentality turned out to have a significant effect excluding the focus on appearance in trend.

**Conclusion:** Amidst the prolonged COVID-19 crisis, beauty salons are faced with a crisis. To overcome this crisis and proceed with a re-startup, a far more specialized research on the marketing subjects will be needed. Therefore, it is expected and hoped that this study will serve as the basic data for re-startup amidst the crisis and will also be used as the marketing materials for the beauty workers aspiring to take a new leap forward.

**[Keywords]** Crisis, Beauty Salon, Startup, Caring for Appearance, Make-Up Behaviors

## 1. Introduction

The beauty industry is a basic industry which helps to satisfy the basic needs and basic instincts of mankind, and it may also be said that it is the most suitable start-up item for today, particularly when appearance has become a form of competitiveness. The Daehan Financial Times forecasted that the generation of baby boomers will continue to invest heavily in anti-

aging[1], and SJ Kim & JB Lee & EY Na claimed that the modern society is aging, and the prolonging of healthy life caused by the changes in social demand following the improvement of living standards is rapidly increasing, whereby the interest in health promotion from the perspective of prevention as well as treatment of disease is also growing[2].

Furthermore, a beauty startup sharing beauty salon for the public value has recently emerged as an alternative, and the restrictions on the joint use have been relaxed under the Enforcement Rules of the Public Sanitation Control Act. Consequently, new forms of public start-up beauty salons which can be shared and used by multiple designers in a single space, which can reduce the startup costs, and which can allow them to take away fair profits are increasing in number[3]. The corporate social responsibility(CSR) for our economy and social environment has changed to enhance the corporate confidence and value, and together with the evolution of CRS, creates the “economic value” and “social value” simultaneously, thereby expanding the total quantity of the shared value as a matter of trend today[4].

Nations today are becoming ever more intimately connected and globalized than before. Consequently, the COVID-19 has spread rapidly, and currently, beauty salons are also faced with difficulties given the prolonged COVID-19. JO Choi & SN Oh & MS Cho(2021) claimed that depression and anger during the COVID-19 situation are likely to further aggravate, and it is necessary to consider the tendency for ADHD, gender, and emotional difficulties[5]. Therefore, it has become very important to start up a beauty salon by identifying and understanding the current situation and the customer requirements.

Therefore, it is very important to study the relationship between caring for appearance and make-up behaviors, and also study retailer behaviors for the beauty startups amidst such crisis.

CY Lee & JB Lee & EY Na claimed that perception and satisfaction with appearance have an important moderating effect between perception and happiness in the study of the effect of perception and satisfaction with appearance on happiness[6].

Caring for appearance behavior refers a series of behaviors such as physical attributes, clothing, hair style, makeup, and nails to show others the appearance playing an important role in the interpersonal relationships according to one's expectations[7].

SH Lee & ES Kim, and Joo YJ[8] claimed that it is an external factor which influences the formation of an individual's image, and that it is an individual's values and beliefs, while classifying caring for appearance dimension into clothing management behavior, beauty management behavior, physical body correction management behavior, and body management behavior. HJ Kim & MH Lee[9] claimed that Korean college students are free and open to uncover and express themselves following their lifestyle and active attitude, and classified caring for appearance behavior into skin care, weight control, clothing management, plastic surgery management, and hair care. H Yoo[10] claimed that, in the difference between caring for appearance behaviors according to the occupational characteristics of salaried workers, it turned out to be decoration pursuing caring for appearance and good feeling pursuing caring for appearance.

HO Lee & YS Ku[11] claimed that people came to have the perception that appearance is a factor which is conducive for competitiveness in the social area, and accordingly, attempts the caring for appearance behavior to get nearer to the appearance required by the society.

Furthermore, putting on makeup can change one's own evaluation and one's self and the others, while expanding one's public image. As for MY Lim[12], it turned out that the characteristics of make-up behaviors were interpersonal, fashion oriented, custom oriented, and self satisfied in a study on the effect of make-up behaviors, hair color, and self-consciousness on the social and psychological expectations. As for AR Go[13], it turned out that the dimension of make-up behaviors was classified into conformity, trend oriented, relationship oriented, individuality pursuing, change, and ostentation of oneself, while for SK Choi & KJ Kang[14], it turned out that, in the study of the psychological expectation effect of the women's make-up behaviors and before and after make-up, the scales of make-up behaviors were classified into instrumentality, prevalence, interpersonal orientation, conformity, personality, and ostentation.

KH Kim & EH Seo[15] claimed that make-up behaviors cannot be viewed simply as individual behaviors of women, and they rather are the social behaviors which help to improve interpersonal relationships, express social roles, and evaluate oneself through the comparison with others.

In this study, questionnaires were distributed to and collected from women college students, and the questionnaires for the development of scale for this study was consisted of caring for appearance, make-up behaviors, and demographic variables, while the purpose is to examine the relationship between appearance and make-up behaviors.

Caring for appearance is expected to influence make-up behaviors, through which, we seek to examine the relationship between caring for appearance and make-up behaviors of women college students. A study on the relationship between caring for appearance and make-up behaviors of the women college students as a marketing research for beauty salon startups amidst the COVID-19 crisis is considered to be a very necessary one. Furthermore, it is meaningful to expect a new startup amidst an unstable crisis, and also contribute to the utilization of the beauty startup industry through this study.

## **2. Research Method and Procedures**

### **2.1. Selection of sample and the data collection**

This study distributed questionnaires to and collected them from women college students in Seoul and Gyeonggi-do from March 20, 2021 until April 5, 2021. Of the 350 copies distributed, 335 copies were collected, and a total of 324 copies were used for the final statistical analysis, excluding 11 copies full of insincere and incomplete responses. As for the questionnaires for the development of the scale of this study, the questionnaire method was used for the women college students aged 20 years or older for an empirical study. The questionnaires were consisted of caring for appearance, make-up behaviors, and demographic variables, while 38 questions in total were presented.

Caring for appearance was the 3 factors of appearance fashion, self-development, and sexual attractiveness used in the study of IS Kim[16], and 3 factors of 8 questions turned out as a result of the factor analysis. As for the make-up behaviors, there were 5 factors of prevalence, conformity, subjectivity, instrumentality, and ostentation used in the study of SK Choi & KJ Kang, and 14 questions were used for the final analysis as a result of the factor analysis, and the 5-point Likert scale was used.

For the data analysis of this study, the SPSS WIN 25.0 program was used.

Frequency, percentage, and average were calculated to examine the demographic characteristics of the research subjects, and the Pearson's moment correlation was calculated to identify and understand the relationship between caring for appearance and make-up behaviors. The stepwise multiple regression analysis was performed to determine the causal relationship between demographic variables, caring for appearance, and make-up behaviors. The level of significance was  $\alpha=.05$  for all analyses.

### **2.2. Research issues**

In this study, the relationship between caring for appearance and make-up behaviors is examined. Specific research issues towards this end are as follows.

Research issue 1. Examine the general characteristics.

Research issue 2. Examine the correlation between caring for appearance and make-up behaviors.

Research issue 3. Examine the effect of caring for appearance on the make-up behaviors.

## **3. Research Results**

### **3.1. Demographic variables of the research subjects**

<Table 1> illustrates the results of performing the frequency analysis in order to examine the demographic characteristics of the survey subjects. First, by grade level, there were 175 students(27.2%) for freshmen, 156 students(24.6%) for sophomores, 153 students(24.1%) for juniors, and 153 students(24.1%) for seniors. It turned out that, as for the major, 206(32.4%) studied humanities and social sciences, 189(29.8%) studied natural sciences, 180(28.3%) studied arts and sports, and 60 students(9.4%) studied others. As a result of surveying the average monthly income(including allowances), 163 people(25.7%) earned the most from KRW 300,000 to less than KRW 400,000, 126 people(19.8%) earned from KRW 400,000 to less than KRW 500,000, 121 people(19.10%) earned KRW 600,000 or more, 94 people(14.8%) earned from KRW 500,000 to less than KRW 600,000, 76 people(12.0%) earned from KRW 200,000 to less than KRW 300,000, and 55 people(8.7%) earned less than KRW 200,000, respectively. As a result of surveying the average monthly cost of appearance care, 445 people(70.1%) were the most spending less than KRW 100,000, 126 people(19.89%) spent from KRW 100,000 to KRW 150,000, and 64 people(10.1%) spent KRW 150,000 or more. It was surveyed that 210 students(33.1%) had friends of the opposite sex, and 425 students(66.9%) responded that they did not have friends of the opposite sex.

**Table 1.** Demographic variables of the research subjects.

	Classification	Frequency(N)	Percentage(%)
Grade level	Freshmen	173	27.2
	Sophomore	156	24.6
	Junior	153	24.1
	Senior	153	24.1
Major	Humanities and social sciences	206	32.4
	Natural sciences	189	29.8
	Arts and sports	180	28.3
	Others	60	9.4
Monthly income (including allowances)	Under KRW 200,000	55	8.7
	KRW 200,000 or more and less than KRW 300,000	76	12.0
	KRW 300,000 or more and less than KRW 400,000	163	25.7
	KRW 400,000 or more and less than KRW 500,000	126	19.8
	KRW 500,000 or more and less than KRW 600,000	94	14.8
	KRW 600,000 or more	121	19.1
Average monthly cost of caring for appearance	Under KRW 100,000	445	70.1
	KRW 100,000 or more and less than KRW 150,000	126	19.8
	KRW 150,000 or more	64	10.1



Whether there is any friend of the opposite sex	Yes	210	33.1
	No	425	66.9
Total		635	100.0

### 3.2. Validation of the validity and reliability of the measurement tools

The factor analysis was performed to validate the validity of the questions used in this study, and discover common factors and use them as variables. In this study, the principal component method was used as the factor extraction method, and only the factors with the eigen values greater than or equal to 1.0 were extracted. Verimax rotation was performed in connection with the factor rotation. Factor loading, which demonstrates the extent of correlation between the factors of each variable, was analyzed based on 0.5 or more.

Furthermore, in this study, Cronbach's  $\alpha$  was calculated to verify the extent of internal consistency between the questions to validate the reliability of the questions measured on the multi-question scale consisted of the homogeneous questions. As shown in the following <Table 2>, <Table 3>.

**Table 2.** Factor analysis and reliability analysis of the caring for appearance.

Questions	Caring for appearance			Common-ality
	Sexual attrac-tiveness	Focus on appear-ance in trend	Self develop-ment	
When I buy clothes, I tend to buy feminine clothes.	<b>.844</b>	.277	.162	.816
I'm intrigued by or interested in feminine styles.	<b>.840</b>	.203	.254	.811
I tend to manage to look feminine.	<b>.814</b>	.294	.124	.765
I coordinate with the clothes in latest trend.	.248	<b>.867</b>	.124	.829
I desire to match the look or style which is currently in fashion.	.251	<b>.857</b>	.112	.810
I think that it is important to make one's appearance in line with styles in trend.	.348	<b>.643</b>	.412	.704
I think that a person whose appearance is prettier will be more successful socially.	.107	.200	<b>.824</b>	.731
I invest in my physical body for social advancement or success.	.237	.092	<b>.815</b>	.728
Eigen value	2.394	2.153	1.647	
Dispersion(%)	29.927	26.914	20.585	
Accumulation(%)	29.927	56.841	77.426	
Reliability(Cronbach's $\alpha$ )	.870	.836	.633	
Overall reliability	.872			
KMO and Bartlett tests	KMO=.855, $\chi^2=2,443.030$ $p<.000$			

**Table 3.** Factor analysis and reliability analysis of the make-up behaviors.

Questions	Make-up behaviors					Com-monality
	Instru- menality	Con- form- ity	Preva- lence	Subjec- tivity	Ostenta- tion	
I think make-up is a means to express myself.	<b>.847</b>	.196	.050	.057	.170	.791
I think make-up is a tool for transformation.	<b>.784</b>	.154	.202	.101	.051	.691
I think make-up is an expression of my individuality.	<b>.749</b>	.072	.129	.257	.219	.697
Sometimes, I want to change my face with make-up techniques.	<b>.515</b>	.075	.297	.364	.279	.570
I feel comfortable when I put on a make-up similar to my friends'.	.091	<b>.829</b>	.029	.025	.101	.708
When I meet strangers, I usually try to put on a make-up similar to theirs.	.131	<b>.801</b>	.179	.091	.021	.700
I try to match the make-up style of the group I belong to.	.114	<b>.796</b>	.133	.067	.113	.682
My friends and I select the cosmetic products of a similar style or color for each other.	.192	<b>.581</b>	.118	.482	-.346	.741
I want to try on a make-up of a model making appearance on TV ads or magazines.	.173	.091	<b>.858</b>	.239	.042	.833
When I see the make-up of a popular celebrity, I want to try doing that as well.	.181	.252	<b>.828</b>	.136	.155	.824
I try changing the make-up technique to change my image.	.192	.130	.279	<b>.815</b>	.227	.847
I try changing the make-up to produce a new look.	.414	.096	.212	<b>.596</b>	.468	.800
Rather than being conscious of others when putting on a make-up, I prefer very bold make-up in the way I desire.	.253	.009	.051	.249	<b>.785</b>	.745
I want to put on a very conspicuous make-up.	.299	.358	.346	.022	<b>.552</b>	.643
Eigen value	2.658	2.600	1.879	1.616	1.518	
Dispersion(%)	18.983	18.572	13.422	11.541	10.843	
Accumulation(%)	18.983	37.555	50.977	62.519	73.361	
Reliability(Cronbach's $\alpha$ )	.817	.799	.808	.804	.572	
Overall reliability	.885					
KMO and Bartlett tests	KMO=.865, $\chi^2=4,041.403$ $p<.000$					

### 3.3. Correlation between the motive of caring for appearance and make-up behaviors of the women college students

In this study, the causal relationship of each variable of caring for appearance and make-up behaviors was validated through a correlation analysis. The following <Table 4> illustrates the results of the correlation verification to identify and understand the correlation between each variable.

As a result of the analysis, all sub-factors of caring for appearance of the women college students turned out to have a statistically significant, positive(+) correlation with all the sub-factors of make-up behaviors( $p<.01$ ).

**Table 4.** Correlation analysis of the caring for appearance and make-up behaviors.

Classification	Average	Standard deviation	Sexual attractiveness	Focus on appearance in trend	Self development	Instrumentality	Conformity	Prevalence	Subjectivity	Ostentation
Sexual attractiveness	2.60	1.005	1							
Focus on appearance in trend	2.60	.942	.613**	1						
Self development	3.08	.918	.431**	.449**	1					
Instrumentality	3.37	.902	.468**	.327**	.398**	1				
Conformity	2.11	.795	.518**	.615**	.411**	.371**	1			
Prevalence	3.05	1.045	.459**	.454**	.341**	.464**	.392**	1		
Subjectivity	3.06	1.130	.362**	.307**	.275**	.643**	.349**	.528**	1	
Ostentation	2.61	.935	.322**	.265**	.262**	.581**	.299**	.426**	.573**	1

### 3.4. Effect of caring for appearance on the make-up behaviors of women college students

The multiple regression analysis was performed to identify and understand the effect of caring for appearance on the make-up behaviors of women college students. As a result of analyzing the effect of caring for appearance on the instrumentality among the make-up behaviors, the multiple correlation coefficient(R) was .516, and the determination coefficient(R<sup>2</sup>) was .266, respectively. Accordingly, the explanatory power of the independent variable on the dependent variable was 26.6%, respectively. Furthermore, the results of the analysis of variance for the property of the regression model were statistically significant as  $F=76.406$ ,  $p<.001$ , demonstrating that the regression formula is suitable.

In the effect of caring for appearance on the instrumentality, sexual attractiveness( $\beta=8.326$ ,  $p<.001$ ) and self-development( $\beta=6.203$ ,  $p<.001$ ) turned out to have a statistically significant, positive(+) effect. However, focus on appearance in trend( $\beta=-.177$ ,  $p>.05$ ) did not turn out to be statistically significant.

As a result of analyzing the effect of caring for appearance on the conformity among the make-up behaviors, the multiple correlation coefficient(R) was .650, and the determination coefficient(R<sup>2</sup>) was .423, respectively. Accordingly, the explanatory power of the independent variable on the dependent variable was 42.3%, respectively. Furthermore, the results of the analysis of variance for the property of the regression model were statistically significant as  $F=154.241$ ,  $p<.001$ , demonstrating that the regression formula is suitable.

In the effect of caring for appearance on the conformity, the sexual attractiveness( $\beta=4.944$ ,  $p<.001$ ), focus on appearance in trend( $\beta=11.036$ ,  $p<.001$ ), and the self-development( $\beta=3.754$ ,  $p<.001$ ) all turned out to have a statistically significant, positive(+) effect.

As a result of analyzing the effect of caring for appearance on the prevalence among the make-up behaviors, the multiple correlation coefficient(R) was .519, and the determination coefficient(R<sup>2</sup>) was .269, respectively. Accordingly, the explanatory power of the independent variable on the dependent variable was 26.9%, respectively. Furthermore, the results of the analysis of variance for the property of the regression model were with  $F=77.591$ ,  $p<.001$ , demonstrating that the regression formula is suitable.



In the effect of caring for appearance on the prevalence, the sexual attractiveness( $\beta=5.851, p<.001$ ), focus on appearance in trend( $\beta=5.420, p<.001$ ), and the self-development( $\beta=3.091, p<.01$ ) all turned out to have a statistically significant, positive(+) effect.

As a result of analyzing the effect of caring for appearance on the subjectivity among the make-up behaviors, the multiple correlation coefficient(R) was .393, and the determination coefficient( $R^2$ ) was .154, respectively. Accordingly, the explanatory power of the independent variable on the dependent variable was 15.4%, respectively. Furthermore, the results of analysis of variance for the property of the regression model were statistically significant with  $F=38.362, p<.001$ , demonstrating that the regression formula is suitable.

In the effect of caring for appearance on the subjectivity, the sexual attractiveness( $\beta=5.207, p<.001$ ), focus on appearance in trend( $\beta=2.074, p<.05$ ) and the self-development( $\beta=2.952, p<.01$ ) all turned out to have a statistically significant, positive(+) effect.

As a result of analyzing the effect of caring for appearance on the conspicuousness among the make-up behaviors, the multiple correlation coefficient(R) was .354, and the determination coefficient( $R^2$ ) was .125, respectively. Accordingly, the explanatory power of the independent variable on the dependent variable was 12.5%, respectively. Furthermore, the results of analysis of variance for the property of the regression model were statistically significant with  $F=30.060, p<.001$ , demonstrating that the regression formula is suitable.

In the effect of caring for appearance on the ostentation, the sexual attractiveness( $\beta=4.587, p<.001$ ) and self-development( $\beta=3.198, p<.01$ ) turned out to have a statistically significant positive(+) effect. However, focus on appearance in trend( $\beta=1.379, p>.05$ ) did not turn out to be statistically significant.

MY Lim(2005) claimed in the study of the socio-psychological expectation effect of make-up behaviors and self-consciousness, that it did not have a particular effect on the passive expected effects such as compensating for self lack or the consciousness of others, yet it did have an effect on the proactive expected effects such as a positive increase in the joy of change. In a study by KH Kim & EH Seo(2011), it was claimed that make-up is a most basic aesthetic act of make up for women, and hence, it is claimed that make-up has become a daily routine for women. This is seen to be the same context as with the results of this study where the sexual attractiveness of caring for appearance, focus on fashion in trend, and self development have a partial effect on the instrumentality, conformity, prevalence, subjectivity, and ostentation of the make-up behaviors. As shown in the following <Table 5>.

**Table 5.** Effects of caring for appearance on the make-up behaviors.

Dependent variable	Independent variable	B	SE	$\beta$	t	sig.
Make-up behaviors	(Constant)	1.798	.118		15.291	.000***
	Sexual attractiveness	.331	.040	.368	8.326	.000***
	Focus on appearance in trend	-.008	.043	-.008	-.177	.859
	Self development	.238	.038	.243	6.203	.000***
R=.516 R <sup>2</sup> =.266 F=74.406*** Durbin-Watson 1.903						
Conform-ity	(Constant)	.399	.092		4.335	.000***
	Sexual attractiveness	.154	.031	.194	4.944	.000***

	Focus on appearance in trend	.369	.033	.437	11.036	.000***
	Self development	.113	.030	.130	3.754	.000***
	R=.650 R <sup>2</sup> =.423 F=154241*** Durbin-Watson 1.921					
	(Constant)	1.228	.136		9.033	.000***
	Sexual attractiveness	.269	.046	.258	5.851	.000***
Prevalence	Focus on appearance in trend	.268	.049	.242	5.420	.000***
	Self development	.137	.044	.121	3.091	.002**
	R=.519 R <sup>2</sup> =.269 F=77.591*** Durbin-Watson 1.991					
	(Constant)	1.555	.158		9.836	.000***
	Sexual attractiveness	.278	.053	.247	5.207	.000***
Subjectivity	Focus on appearance in trend	.119	.058	.100	2.074	.038*
	Self development	.153	.052	.124	2.952	.003**
	R=.393 R <sup>2</sup> =.154 F=38.362*** Durbin-Watson 2.033					
	(Constant)	1.466	.133		11.019	.000***
	Sexual attractiveness	.206	.045	.222	4.587	.000***
Ostentation	Focus on appearance in trend	.067	.048	.067	1.379	.168
	Self development	.139	.044	.137	3.198	.001**
	R=.354 R <sup>2</sup> =.125 F=30.060*** Durbin-Watson 1.901					

Note: \*p<.05, \*\*p<.01, \*\*\*p<.001.

## 4. Conclusion

The purpose of this study was to examine the relationship between caring for appearance and

make-up behaviors of the women college students for beauty salon startups amidst the current crisis, and the results are as follows.

First, the questionnaire was consisted of caring for appearance, make-up behaviors, and demographic variables, while caring for appearance demonstrated the 3 factors of focus on appearance in trend, self-development, and sexual attractiveness, and the make-up behaviors turned out to be instrumentality, conformity, prevalence, subjectivity, and ostentation.

Second, all sub-factors of caring for appearance of the women college students turned out to have a significant correlation with all the sub-factors of the make-up behaviors.

Third, in the effect of caring for appearance motive on the instrumentality, the sexual attractiveness and self-development turned out to have a statistically significant effect, and as for conformity, sexual attractiveness, focus on appearance in trend, and self-development turned out to be statistically significant, and as for subjectivity and prevalence, all factors turned out to be significant, and as for ostentation, the sexual attractiveness and self-development turned out to have a statistically significant effect.

Amidst the prolonged COVID-19 crisis, beauty salons are faced with a crisis. To overcome such crisis and proceed with the re-startup, more specialized studies on the marketing targets will be required. Therefore, it is expected and hoped that this study will serve as the basic data for the re-startup amidst the crisis and be used as the marketing materials for the beauty workers aspiring to take a new leap forward.

## 5. References

### 5.1. Journal articles

- [2] Kim SJ & Lee JB & Na EY. Q-methodological Approach to the Perception of Meridian Massage for Health Management. *International Journal of Crisis & Safety*, 5(2), 47-51 (2020). [\[Article\]](#)
- [4] Kim JN & Lim YJ. The Implications of Corporate Philosophy and Shared Value for Social Value Creation. *International Journal of Public Value*, 5(2), 13-22 (2020). [\[Article\]](#)
- [5] Choi JO & Oh SN & Cho MS. University Students' Learning Behavior, Online Learning Satisfaction, University Satisfaction, and Emotional Difficulties according to ADHD Tendencies and Gender in Covid-19 Crisis. *International Journal of Crisis & Safety*, 6(1), 51-67 (2021). [\[Article\]](#)
- [6] Lee CY & Lee JB & Na EY. Psychological Health Relation between Perception, Appearance Satisfaction, and Happiness of Women Participating in Jewelry Therapy. *International Journal of Protection Convergence*, 6(1), 12-21 (2021). [\[Article\]](#)
- [7] Kang MJ & Kim BB. Effects Self-awareness of Appearance on Appearance Management Behavior: Focused on Women in Their 20s. *Journal of Korean Traditional Costume*, 23(3), 35-48 (2020).
- [8] Lee SH & Kim ES & Joo YJ. The Effect of Career Women's Appearance Management Behaviors on Cosmetics Shopping Trends & the Purchase Satisfaction Degrees. *The Korean Society of Design Culture*, 23(4), 629-641 (2017).
- [9] Kim HJ & Lee MH. A Study of Appearance Management Behaviors and Body Exposure Attitudes according to Sex Role. *The Korean Society of Costume*, 60(3), 99-109 (2010).
- [10] Yoo H. Differences in Appearance Management Behavior according to Occupational Characteristics and Demographic Characteristics of Workers. *The Korean Society of Costume*, 67(2), 17-35 (2017).
- [11] Lee HO & Ku YS. Study on the Relationship of Appearance Instrumentality, Appearance Concern and Appearance Management Behavior of Women. *The Korean Society of Costume*, 68(1), 1-13 (2018).
- [12] Lim MY. Effects of Makeup Behaviors, Hair Color and Self-consciousness on the Level of Expected Social-psychological Effect. *Korean Fashion & Costume Design Association*, 7(2), 121-135 (2005).
- [13] Go AR. A Comparative Study on the Difference in Age, Consumption Value and Cosmetics Purchasing Behavior of Adult Women in Korea. *The Korean Society of Culture*, 26(1), 15-39 (2020).

- [14] Choi SK & Kang KJ. The Makeup Behavior and Effect of Psychological Expectation after the Makeup according to Demographics and Contact with Media of Woman. *The Korean Society of Fashion Design*, 7(1), 81-95 (2007).
- [15] Kim KH & Seo EH. A Study on Psychological Effect of Makeup Behavior Following Cosmetic Surgery. *The Korean Society of Cosmetics and Cosmetology*, 1(1), 15-23 (2011).
- [16] Kim IS. Differences of Appearance Management Behaviors among Appearance Management Motives. *The Korean Fashion & Textile Research Journal*, 19(4), 468-478 (2017).

## 5.2. Additional references

- [1] <http://www.kbanker.co.kr/> (2019).
- [3] <http://www.job-post.co.kr/> (2020).

## 6. Appendix

### 6.1. Authors' contribution

	Initial name	Contribution
Lead Author	JC	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/>
Corresponding Author*	JS	-Make a significant contribution to collection <input checked="" type="checkbox"/> -Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	IJ	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

Publisher: J-INSTITUTE  
ISSN: 2189-7603

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: in\_space@hanmail.net

DOI Address:  
dx.doi.org/10.22471/crisis.2021.6.3.12

© 2021 J-INSTITUTE

## The Relationship Between Stress, Adaptation to College Life, and Quality of Life for Preschool Teachers During the COVID-19 CRISIS

Guteak Bae<sup>1</sup>

Masan University, Changwon, Republic of Korea

Soonsun Park<sup>2\*</sup>

Kyungnam University, Changwon, Republic of Korea

Youngmi Jin<sup>3</sup>

Kyungnam University, Changwon, Republic of Korea

Jihye Lee<sup>4</sup>

Kyungnam University, Changwon, Republic of Korea

### Abstract

**Purpose:** This study is a descriptive research study intended to identify and understand the relationship between interpersonal sensitivity, daily stress, adaptation to college life, and quality of life for the candidates for preschool teacher during the COVID-19 CRISIS. Through which, it is sought to improve the overall quality of life by reducing the interpersonal sensitivity of the candidates for preschool teachers amidst the spread of the COVID-19, and furthermore, provide assistance for the growth of the candidates for preschool teachers' professionalism.

**Method:** To achieve the purpose of this study, a questionnaire survey was conducted with 279 preschool teacher candidates who are the first and second year students in colleges and universities which train preschool teachers in Busan and Gyeongnam, who enrolled after the outbreak of the COVID-19, and the SPSS statistics program was utilized to perform the descriptive statistics, correlation analysis, and the multi-parameter regression analysis.

**Results:** First, interpersonal sensitivity had a significantly positive correlation with daily stress and adaptation to college life, and a negative correlation with quality of life. Furthermore, daily stress had a positive correlation with interpersonal sensitivity, a negative correlation with quality of life, while quality of life and interpersonal sensitivity had a negative correlation. Second, the extent of interpersonal sensitivity and daily stress explaining the quality of life was significantly positively correlated for 44.5%. Third, in the relationship of effect of the interpersonal sensitivity on the quality of life, daily stress had a partially mediating effect.

**Conclusion:** Preschool teacher candidates perceived interpersonal sensitivity resulting from negative self conceptions, daily stress, and adaptation to college life as average or below during the COVID-19 crisis, and considering the fact that interpersonal sensitivity influences daily stress, quality of life, and adaptation to college life overall, it is necessary amidst the COVID-19 crisis to expand various counseling and education programs to reduce the interpersonal sensitivity and daily stress for preschool teacher candidates and enhance their adaptation to college life and the overall quality of life.

**[Keywords]** Adaptation to College Life, Daily Stress, Quality of Life, Interpersonal Sensitivity, COVID-19 Crisis

## 1. Purpose of and Need for the Study

Breaking out in Wuhan, China, in December 2019, COVID-19 is a virus which may infect humans and animals, and was so named since the structure of foreign protein resembles a crown[1], and currently, is spreading across the world, including South Korea, at an exponential rate. It has been confirmed that COVID-19 is transmitted via close contacts within the communities connecting person to person[2]. That is, since COVID-19 is highly contagious and spreads through droplets or contact, everyone within the community may be infected, and the relevant risk is stressed since such a small number of people are highly likely to infect a large number of people.

The nationwide spread of COVID-19 from within the community has created stress, anxiety and fear concerning interpersonal contact and interaction, while everyone is wearing a mask whenever they go out, or most schools across the national are operating contactless class online concurrently[3]. It was reported that over half of the local residents who experienced MERS in the past have experienced negative emotions including stress, anxiety, and depression, etc.[4], and the results of the “Survey of the People’s Perception of COVID-19” conducted in Korea recently[5][6] also yielded such a high rate of experiencing negative emotions such as anxiety, anger, shock, and fear. As such, if the outbreak of a new infectious disease within the local community is prolonged and expanded, it would negatively affect the psychological factors and the quality of life of the college students, and hence, it is necessary to prepare measures to proactively provide them with the psychological and emotional support for the students.

In particular, as for the preschool teachers, notwithstanding the fact that it is an academic area which requires the ability to interact with others, such as childcare practice, volunteer activities, artistic activities, play activities, and mock classes during the preschool education curriculum, the restriction of contacts with others due to COVID-19 is a factor hindering the establishment of teaching intuition and professional attitude for the preschool teacher candidates. In particular, the time college students spend has an important meaning because the successful performance of developmental tasks is intimately related to the task performance as adults. From such perspective, interpersonal sensitivity which avoids the interaction with others operates as a factor hindering the successful task performance as preschool teachers, and the high interpersonal sensitivity lowers interpersonal relationships and the ability to adapt to school life and influences life overall, and hence, it is predictable that it influences daily stress or quality of life[7].

The increasing interpersonal sensitivity due to COVID-19 is caused by the level of mental health in terms of the human relationship, that is, such negative self concepts as discomfort, inadequacy, and inferiority in terms of interaction with others, while the individuals with greater interpersonal sensitivity have a selective sensitivity for the threatening cues, and it refers to the tendency in interpreting their negative perceptions of others and their vague and non-threatening behaviors as intentional and hostile behavior towards others, and attribute the negative circumstances to others[8][9]. It has been reported that as for such an interpersonal sensitivity, college students who lack social skills respond sensitively to the reactions of others amidst COVID-19 and have difficulty in adapting to school life as they avoid situations where many people gather[10], and it may be predicted to cause daily stress.

Accordingly, in this study, the extent of the overall stress, interpersonal sensitivity, and adaptation to life experienced by the preschool teacher candidates due to the COVID-19 crisis was examined, and by verifying as to whether such psychological variables were related to the quality of life, it is sought to be utilized as the basic data for the preparation of the mental health and quality of life related promotional programs together with relieving of the psychological stress of the preschool teacher candidates.

This study is a descriptive correlation study which attempts to articulate the relationship between the level of stress and interpersonal sensitivity of the preschool teacher candidates due to the COVID-19 crisis on the quality of life. The specific purpose is to identify and understand the relationship between the interpersonal sensitivity of the preschool teacher candidates due to the COVID-19 crisis on the daily level of stress, adaptation to college life, and the quality of life, and the specific issues are as follows.

Research issue #1. How does the interpersonal sensitivity of candidates for preschool teacher influence the quality of life?

Research issue #2. Does interpersonal sensitivity of candidates for preschool teacher influence the quality of life via the adaptation to college life and daily stress?

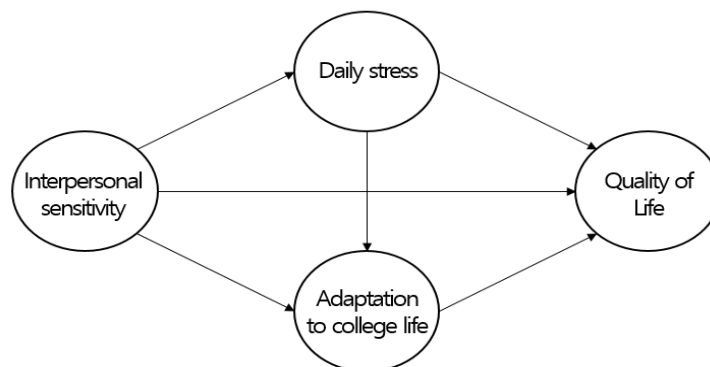
## **2. Research Method**

### **2.1. Research model**



In this study, the relationship between daily stress and adaptation to college life and the mediating effect were sought to be examined in the relationship of the interpersonal sensitivity of preschool teacher candidates on the quality of life amidst the spread of COVID-19. Towards this end, a multi mediation model was placed as illustrated in <Figure 1>, and the multi-media regression analysis was performed.

**Figure 1.** Continuous multiple mediator model.



## 2.2. Research tool

The measurement tool of daily stress used for this study is the stress response inventory(SRI) revised and supplemented by Choi, Kang, and Woo[11], the stress measurement tool developed by Koh, Park, and Kim[9] for adults aged 20 or older was used, and a permission from the tool developer was secured via email. This tool was consisted of a total of 22 questions, with 9 questions on somatization, 8 questions on depression, and 5 questions on anger on a 5-point Likert scale. The score ranges from 22 to 110, with higher scores indicating higher stress. The reliability of this study was Cronbach's  $\alpha=.93$ .

The measurement tool of interpersonal sensitivity is a tool intended for evaluating the status of mental health as the Symptom Checklist-90-Revision:SCL-90-R), and among the SCL-90-R(Symptom Checklist-90-Revision) standardized by Kim Gwang-Il[12] in Korea for the self reported list of multi-dimensional symptoms developed by Derogatis[13], 9 questions on interpersonal sensitivity(Interpersonal Sensitivity: IS) were used. Each question was consisted of a 5-point Likert scale, and yielded Cronbach's  $\alpha=.89$  in this study.

As for the measurement tool of quality of life, the Korean version of the World Health Organization's simple measure of the quality of life developed for adults which Min et al.[14][15] translated and standardized what was developed in 1995(World Health Organization Quality of Life assessment instrument, WHOQOL) by the WHO[16], and a permission was secured from the tool developer via email. This tool is consists of a total of 26 questions and a 5-point Likert scale. The reliability in this study was Cronbach's  $\alpha=.93$ .

The measure for the adaptation to college life has a total of 25 questions, and the measure modified by Yoon-jeong Lee[17] in line with the purpose of the study is based on the Student Adjustment to College Questionnaire(SACQ) developed by Baker and Siryk(1984) was used. It was consisted of a total of 25 questions on a 5-point Likert scale, and the reliability was Cronbach's  $\alpha=.86$ .

## 2.3. Data analysis

The data collected in this study were analyzed by using the SPSS 22.0 program. Descriptive statistics were performed to examine and understand the general characteristics of the research subjects, and the multiple regression analysis was performed by utilizing the multiple mediator model in order to understand the effect of the Pearson's correlation coefficients on interpersonal sensitivity, general stress, adaptation to college life, and quality of life to understand the inter variable relationship.

### 3. Research Results

#### 3.1. General characteristics of the research subjects

The research subjects were 300 preschool teachers candidates selected from the departments related to preschool education and childcare in Gyeongnam and Busan, and the survey was conducted for 15 days from June 1<sup>st</sup>, 2021 until June 14<sup>th</sup>, 2021 by utilizing the Google survey authoring tool. A total of 279 copies of the questionnaires(recovery rate of 93%) were recovered and analyzed. The general characteristics of the research subjects are as illustrated in <Table 1>.

**Table 1.** General characteristics of the research subjects.

Classification		N	%
Gender	Men	47	16.8
	Women	232	83.2
Age	20 or younger	7	2.5
	21-25 or younger	243	87.1
	26-30 or younger	14	5.0
	31 or older	15	5.4
Classification of college	4 year program	87	31.2
	Community college	192	68.8
Total		279	100

#### 3.2. Correlation and descriptive statistics of the research variables

The mean and standard deviation were calculated to examine and understand the general tendencies of interpersonal sensitivity, adaptation to college life, daily stress, and quality of life, which are the main variables of this study, and correlation analysis was performed to examine and understand the inter variable relationship as in <Table 2>. The adaptation to college life of the preschool teacher candidates demonstrated such a significantly positive relationship with daily stress( $r=.786$ ,  $p<.001$ ) and inter-personal sensitivity( $r=.569$ ,  $p<.001$ ), yet demonstrated a negative relationship with the quality of life perceived by the preschool teacher candidates( $r=-.583$ ,  $p<.001$ ). Daily stress was positively correlated with interpersonal sensitivity( $r=.699$ ,  $p<.001$ ), while also negatively correlated with the quality of life( $r=-.647$ ,  $p<.001$ ), and the quality of life demonstrated a negative correlation with inter-personal sensitivity( $r=-.575$ ,  $p<.001$ ).

**Table 2.** Correlation and descriptive statistics of the research variables.

	Adaptation to college life	Daily stress	Quality of life	Interpersonal sensitivity
Adaptation to college life	1			
Daily stress	.786**	1		
Quality of life	-.583**	-.647**	1	
Interpersonal sensitivity	.569**	.699**	-.575**	1
M	2.75	2.49	3.47	2.25

SD	.86	.8	.64	.86
----	-----	----	-----	-----

Note: \*p<.05, \*\*p<.01, \*\*\*p<.001.

### 3.3. Results of the multi-parameter regression analysis

To examine and understand the effect of interpersonal sensitivity of the preschool teacher candidates on the quality of life amidst the spread of COVID-19, the multi-parameter regression analysis was performed as illustrated in <Table 3>. First, in terms of the effect of interpersonal sensitivity of preschool teacher candidates on daily stress, the extent to which interpersonal sensitivity explains daily stress was approximately 48.8%, yielding a significantly positive relationship. The extent of interpersonal sensitivity explaining college life adaptation was about 21.8%, which showed a significantly positive relationship, and it turned out that the higher the interpersonal sensitivity caused by COVID-19, the greater the daily stress. The extent to which interpersonal sensitivity explains the adaptation to college life is approximately 21.8%, which demonstrated a significantly positive relationship, indicating difficulties in making adaptation to college life, given the higher interpersonal sensitivity. Furthermore, the extent of interpersonal sensitivity explaining the quality of life was approximately 32.8%, demonstrating a negative relationship of influence. In the relationship of effect between interpersonal sensitivity, adaptation to college life, and daily stress on the quality of life, the extent of interpersonal sensitivity and daily stress explaining the quality of life turned out to have a significantly positive correlation at 44.5%.

According to the Baren & Kenny's method, it turned out that daily stress has a partially mediating effect in terms of the effect of interpersonal sensitivity on the quality of life.

**Table 3.** Analysis of the continuous multiple mediator model.

	Model 1 (dependent: daily stress)		Model 2 (dependent: adaptation to college life)		Model 3 (dependent: quality of life)		Model 4 (dependent: quality of life)	
	B	SE	B	SE	B	SE	B	SE
(Constants)	1.03***	.096	2.52***	.051	4.44***	.088	4.53***	.267
Interpersonal sensitivity	.65***	.040	.19***	.021	-.43***	.037	-.18***	.047
Daily stress							-.43***	.060
Adaptation to college life							.14	.112
$R^2$	.488		.218		.328		.445	
F-value	264.38***		78.52***		136.56***		75.16***	

Note: \*p<.05, \*\*p<.01, \*\*\*p<.001.

As a result of analyzing the mediating effect via Sobel's test <Table 4>, the indirect partially mediating effect of daily stress on the path of interpersonal sensitivity of the preschool teacher candidates on the quality of life turned out to be -.276, and the validation statistics turned out to be significant at

-.648( $p < .001$ ). That is, it turned out that interpersonal sensitivity of preschool teacher candidates mediates daily stress and has a significantly negative effect on the overall life.

**Table 4.** Indirect effect path analysis.

Mediation effects path	Indirect effects	t-value	<i>p</i>
Interpersonal sensitivity → daily stress → quality of life	-.276	-.648	.000

## 4. Discussion

This study targeted the preschool teacher candidates who experience difficulties in improving the basic interactive skills which the preschool teachers ought to have as contactless classes are conducted at the start of semester at the same time amidst the COVID-19 pandemic situation, and validated the validity of the theoretical model regarding the relationship of effect between daily stress and adaptation to college life among the effects of interpersonal sensitivity, which is the sensitivity for making contact with others, on the quality of life. First, the extent of recognition and tendency of each variable was validated via the descriptive statistics, and the direct effect of interpersonal sensitivity of the preschool teacher candidates due to COVID-19 on the quality of life perceived by the preschool teacher candidates and the indirect effect via daily stress and adaptation to college life was examined, and it is sought to discuss the method of response based on that.

Examining the tendency of the recognition of the measured variables in this study, it turned out that the average of interpersonal sensitivity was 2.25 points, and the average of daily stress was 2.49 points, which was lower than the average of 3 points. This implicates that COVID-19 is having a negative impact on the interpersonal interaction, thereby leading to an increase in the depression and anger, etc. Such results seem to have an impact on the adaptation to college life, and the adaptation to college life also yielded a score of 2.75, which is lower than the normal of 3 points, and hence, this was contrary to the results of a study[18] conducted by Yoon-jeong Lee and Hyun-jeong Jang on the adaptation to college life of college freshmen for the year immediately preceding COVID-19[18], which pertained to the adaptation to college life of college freshmen before COVID-19. It seems that the COVID-19 crisis has a negative effect on the overall interpersonal interaction and daily stress of the preschool teacher candidates, thereby negatively influencing the quality of life and the adaptation to college life. These findings are the same as those of Moon HJ[19] who studied college life and college students' stress experiences due to COVID-19. In particular, daily stress and college life adaptation were experiencing stress due to non-face-to-face online school life after COVID-19. Also, it is reported that it is difficult to maintain health because of sitting in front of a computer for a long time, and that there are many cases of frustration and alienation due to excessive use of communication devices[19]. This is physically burdensome due to COVID-19, but it is assumed to cause negative psychology and emotional conditions, causing daily stress and problems in college adaptation. In addition, Moon HJ(2021)'s study shows that relationships with acquaintances after COVID-19 become estranged and difficulty in expanding new interpersonal relationships, causing daily stress and difficulty in adapting to college life[19].

The inter-personal sensitivity of the preschool teacher candidates demonstrated that daily stress has a partially mediated effect between the quality of life pathways. In particular, in the effects of daily stress, interpersonal sensitivity, and adaptation to college life on the quality of life, the extent to which daily stress, interpersonal sensitivity, and adaptation to college life explain the quality of life turned out to be approximately 44.5%, while interpersonal sensitivity and daily stress turned out to have a significantly negative effect on the quality of life. Furthermore, the inter-personal sensitivity and daily stress turned out to have a positive effect on the adaptation to college life. This means that, the higher the interpersonal sensitivity and daily stress of the preschool teacher candidates, the lower the satisfaction for the quality of life, and an adequate tension and non-excessive daily stress would mean that there is a positive effect on the adaptation to college life. Furthermore, the results are

consistent with the studies[20][21] which uncovered that the daily stress and the perceived level of stress influence the adaptation to college life. In addition, they resemble the results of studies demonstrating that excessive stress experienced by the preschool teacher candidates has a negative effect on such emotional disorder as anxiety, gloom, helplessness and worthlessness, depression, and decreased self-confidence, grades, and school adjustment[18][22][23][24][25][26], and are also consistent with the results of the studies[24] which claimed that depression or stress influence the overall quality of life. This means that, the positive emotions based on interpersonal relationships increase the satisfaction of life, and as such experiences increase, such negative emotions as depression, anxiety, and stress decrease[27].

Hence, given the fact that the day to day and the perceived stress and interpersonal sensitivity are the factors which reduce the ability to adapt to college life and deteriorate the quality of life, and that the positive relationships via direct personal contact with others affect the adaptation to college, social adaptation, and the healthy human development[28], it will be necessary to provide various counseling programs to help reduce stress as a venue to increase the adaptation of preschool teachers amidst the COVID-19 crisis moving forward, and also develop the programs for stress management strategies or recovery of interpersonal relationship, while providing the most assistance with the utilization of the measures for the psychological and positive responses to COVID-19.

Through such results, considering the fact that, the students' daily stress and quality of life influence the adaptation to college life, and the overall satisfaction of college life influences the overall quality of life[29]. And that the restrictions on the interaction with others lead to psychological drifting of the preschool teacher candidates, yielding a decrease in the confidence in their major, and an increase in daily stress, affecting the adaptation to college life and a decrease in the satisfaction of life, It will be necessary to invest more intensively on the educational services and physical facility services, which are the areas of service influencing the quality of life in college. In particular, the quality management of teachers is very important to secure the public interest of childcare, and it is a very important task to understand the psychological conditions such as interpersonal sensitivity of the preschool teacher candidates, and manage them to ensure that they can maintain a positive psychological conditions, and this where colleges and universities can be no exception[30].

The college years are the so-called emerging adulthood, a transition period from adolescence to adulthood, and establish identity and determine the direction of life based on new and diverse attempts and experiences[31]. In this process, the process of establishing and expanding interpersonal relationships is essential, and the actual period of college students is known to be the most mature and expanded human relationship than adolescents. However, the inability to establish and expand interpersonal relationships due to COVID-19 is a loss to college students in terms of development and psychological problems. Multidimensional attention is needed to college students who have difficulty forming and expanding interpersonal relationships due to social distancing, in that experiencing stress due to poor interpersonal or dissatisfaction[32][33] can experience more serious psychological problems such as loneliness, depression, and isolation.

By examining and understanding the relevance of the interpersonal sensitivity and daily stress of the preschool teacher candidates due to COVID-19 on the adaptation to college life and quality of life, this study may be utilized as the basic data for the preparation of programs to help promote the mental health and quality of life along with the relaxation of stress due to COVID-19.

## 5. References

### 5.1. Journal articles

- [1] Fauci AS & Lane HC & Redfield RR. No Title. Covid-19-navigating the Uncharted. *The New England Journal of Medicine*, 382(13), 1268-1269 (2020).
- [2] Kim NS. Current Status and Assignment of Coronavirus Infection-19. *Health and Welfare Issue & Focus*, 373, 1-13 (2020).
- [3] Jun JA. Coronavirus Infections-19 Mental Health Care Status and Tasks. *Health and Welfare Issue*

- & *Focus*, 375, 1-7 (2020).
- [4] Lee DH & Kim JY & Kang HS. An Exploratory Study on the Fear and Emotional Distress Experienced by the General Public about MERS Infection. *Journal of Psychology in Korea: General*, 35(2), 355-383 (2016).
  - [5] Hong YJ & Lee MK. The Effects of Parent-child Relationships on Youth Anxiety, Interpersonal Sensitivity and Depression: Focusing on the Adjustment Effect of Resilience Elasticity. *Adolescent Studies*, 21(10), 445-474 (2014).
  - [8] Lee HJ. Self-concept, Attention, and Memory Bias of Paranoid Groups. *Psychology*, 9(1), 77-99 (2000).
  - [9] Koh KB & Park JK & Kim CH. Development of the Stress Response Inventory. *Journal of the Korean Neuropsychiatric Association*, 39(4), 707-719 (2000).
  - [10] Park JY. Analysis of the Influence of Social Support, Academic Elasticity, and Self-respect for Adult College Students in Local Universities. *Korea Local Autonomy Research*, 14(3), 47-75 (2012).
  - [11] Choi SM & Kang TY & Woo JM. Development and Validation of a Modified form of the Stress Response Inventory for Workers. *Journal of the Korean Neuropsychiatric Association*, 45(6), 541-553 (2006).
  - [12] Kim KI & Won HT & Lee JH & Kim KY. Standardization Study on the Korean Version of Simple Mental Health Examination: Reaction Characteristics of Normal People. *Neuropsychiatry*, 17(4), 449-458 (1978).
  - [13] Derogatis LR. The SCL-90: An Outpatient Psychiatric Rating Scale-preliminary Report. *Psychopharm Bull*, 9, 13-27 (1973).
  - [14] Min SK & Lee CI & Kim KI & Suh SY & Kim DK. Development of Korean Version of WHO Quality of Life Scale Abbreviated Version(WHOQOL-BREF). *Journal of the Korean Neuropsychiatric Association*, 39, 571-579 (2000).
  - [15] Kim SK. A Study on the Stress and School Adaptation of College Freshmen. *Adolescent Studies*, 10(2), 215-237 (2003).
  - [18] Lee YJ & Jan HJ. Influence of Self-identity, Perceived Stress and Ambivalence on Emotional Expressiveness of Freshmen to Adaptation to University Life. *A Study on the Education of Educational Faculty*, 19(23), 703-714 (2019).
  - [19] Moon HJ. A Phenomenological Study of Stress Experience of College Students Displayed in Non-face-to-face College Life by Covid-19. *Korean Association for Learner-Centered Curriculum and Instruction*, 21(11), 233-247 (2021).
  - [22] Lee YR & Kim SH & Min MS. Level of Stress according to MBTI Personality Types of Nursing College Students, Stress Response Methods and School Adaptation. *Korea Nursing Education Journal*, 19(2), 172-182 (2013).
  - [23] Haines ME & Norris MP & Kashy DA. The Effects of Depressed Mood on Academic Performance in College Students. *Journal of College Student Development*, 37, 519-526 (1996).
  - [24] Byeon MK & Choi EY & So AY. Health Regulations: The Effects of Health Promoting Lifestyle, Depression, and Religious Activities on the Quality of Life for Christian Believers. *Regulations*, 6(2), 58-66 (2021). [\[Article\]](#)
  - [27] Kim JN & Lim YJ. The Relationship between Self-esteem and Gratitude Tendency of University Students during the Corona-19 Era of Human Disaster. *International Journal of Human & Disaster*, 6(1), 26-35 (2021). [\[Article\]](#)
  - [28] Park SU & Kim DJ. The Impact of the Sports Participation Motivation of Korea College Students on Social Support and Social Adaptation. *International Journal of Sport*, 2(2), 11-17 (2017). [\[Article\]](#)
  - [30] Cho HJ. The Effect of Learned Helplessness on the Adaptation to College Life. *Regulations*, 6(2), 10-15 (2016). [\[Article\]](#)
  - [31] Amett JJ. Emerging Adulthood: A Theory of Development from the Late Teens through the Twenties. *American Psychologist*, 55(5), 469-480 (2000).
  - [32] Rook KS. The Health Effect of Negative Social Exchange in Later Life. *Generations*, 38(1), 15-23 (2014).
  - [33] Choi JW & Lim JH. The Effect of Negative Experience in Interpersonal Relationships on



Depression Symptoms in College Students. *Studies on Korea Youth*, 29(1), 33-59 (2018).

## 5.2. Thesis degree

- [17] Lee YJ. The Adaptation and Career Plan of Seoul Students from the Countryside to College Life. Ewha Womans University, Master's Thesis (2000).
- [20] Kim SH. The Relationship between College Students' Career Stress and College Life Adaptation: The Adjustment Effect of Self-elasticity and the Mediation Effect of Career Maturity. Jeonbuk National University, Master's Thesis (2011).
- [21] Kim JH. Self-control and Health-promoting Lifestyle in the Relationship between College Student Stress and College Life Adjustment have a Mediated Effect. Ewha Womans University, Master's Thesis (2012).
- [25] Kim JA. Effects of Adversarial Sensitivity and Social Support of Teenagers on the Tendency to Refuse to go to School. Pusan National University, Master's Thesis (2013).
- [26] Lee JH. University Student's Life Stress, Self-effectiveness, Physical Symptoms and Adjustment to College Life. Gongju University, Master's Thesis (2013).
- [29] Kim JH. The Impact of University Service Satisfaction on the Quality of Life and Attitude to University in University Life. Yonsei University, Master's Thesis (2006).

## 5.3. Conference proceedings

- [16] World Health Organization. Whoqol Study Protocol. WHO (1993).

## 5.4. Additional references

- [6] <http://biz.newaily.co.kr/> (2020).
- [7] <http://www.akomnews.com/> (2020).

# 6. Appendix

## 6.1. Authors contribution

	Initial name	Contribution
Lead Author	GB	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
Corresponding Author*	SP	-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	YJ	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
	JL	-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

Publisher: J-INSTITUTE  
ISSN: 2189-7603

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: korprof270@gmail.com

DOI Address:  
dx.doi.org/10.22471/crisis.2021.6.3.21

© 2021 J-INSTITUTE

## North Korean Refugees SAFETY: South Korean Security Police to Verify the Difference in Empowerment, Working Periods

Sungbae Jung<sup>1</sup>

Kookje University, Pyeongtaek, Republic of Korea

Chiyoung Lee<sup>2\*</sup>

Yongin University, Yongin, Republic of Korea

Sunggu Jo<sup>3</sup>

Kyungwoon University, Gumi, Republic of Korea

### Abstract

**Purpose:** Empirical research was conducted on the Korean security police by verifying the difference between the total working period of the police and the working period of the security department.

**Method:** In this study, among police officers in the security department as of 2020 who had experience in work related North Korean defectors, 100 trainees in the Police Human Resources Development Institute were surveyed via self-administration method. Among the collected survey questionnaires, 91 were selected as valid samples, excluding those whose answers were incomplete or missing.

**Results:** The differences in impressions according to the total length of service for the police were significant in Q-8, Q-11, Q-12, Q-13, Q-14, Q-15, Q-16, Q-17, Q-18, Q-19, and Q-20. Also, the differences in the impressions of security officers over their working periods were significant in Q-8, Q-14, Q-18, Q-19, and Q-20.

**Conclusion:** efforts to improve the working environment and organizational culture must be made to improve the importance of police activities. Furthermore, measures for psychological and economic stability of police officials must be taken together to ensure a long working period. This will not only help improve the national security services but also improve crime prevention and response activities for the safety of the people.

**[Keywords]** North Korean Refugees, Security Police, Empowerment, Working Period, Difference

## 1. Introduction

The constantly changing police organization due to the security environment is also diversifying and opening up, and its importance to the role of police organization members is gradually increasing. Police now play a very important role in a society that plays a role in crime prevention and crime controller and, more recently, in protecting crime victims. However, even within the police organization, it is found that it has difficulty adjusting to work due to hierarchical organizational life, response activities in dangerous field environments, and public awareness and cooperation[1][2].

In the past, the role and leadership of bosses within an organization valued strategic decision making from a leader's perspective. It recognizes the vision and mission of the organization and invigorates its members. The role of leader has been important in the direction of[3]. However, organizations always grow through changes, and organizational changes vary greatly in their purposes, scope, and trends, and each type of change requires very different leadership. In particular, the empowerment to empower members of an organization or field manager is now increasingly required throughout society[4]. Recently, community police activities have been emphasized to increase the autonomous and effective effectiveness of the transfer of power from the centralized national police agency to the region in order to provide new police services[5]. This change in environment emphasizes the autonomy and differentiation of police officers, and allows police officers to quickly resolve various incidents and have their own

decision-making rights to their responsibilities[6]. Implementing this impression is a new human resource management system for police organizations and a method for improving the organizational environment that police managers recognize and implement the potential of subordinates[7][8]. For this reason, there are research topics related to empowerment in police organizations and human resources management[9][10], direct resolution of problems arising from organizational and human resources management such as job dissatisfaction, deception, inefficiency of work, misperformance and avoidance of risky work[11][12]. Most organizational objectives are aimed at measuring performance and achieving performance to drive change and development to a more effective and efficient organization, and as a means of achieving the organization's objectives, impression is a critical factor. This is because in an empowered organization, it can lead to changes in the perception of the members of the organization, and the voluntary and creative performance of the organization is combined with organizational effectiveness, i.e., job satisfaction, and organizational immersion[13][14][15]. Also, if police officials are properly empowered, they will be able to challenge and motivate them to learn and further demonstrate their already-held potential and creativity. Therefore, in this study, empirical research was conducted on the Korean security police by verifying the difference between the total working period of the police and the working period of the security department.

## 2. Research Method

### 2.1. Research subjects and sampling method

In this study, among police officers in the security department as of 2020 who had experience in work related North Korean defectors, 100 trainees in the Police Human Resources Development Institute were surveyed via self-administration method. Among the collected survey questionnaires, 91 were selected as valid samples, excluding those whose answers were incomplete or missing.

**Table 1.** The general characteristic of the research subjects.

	Description	N(%)	Total
Gender	Male	61(67.0%)	91
	Female	30(33.0%)	
Age	20s	7(7.7%)	91
	30s	28(30.8%)	
	40s	30(33.0%)	
	50s or older	26(28.6%)	
Education	High school	14(15.4%)	91
	Junior college	30(33.0%)	
	College	43(47.3%)	
	Graduate school	4(4.4%)	
Rank	Policemen/women	1(1.1%)	91
	Senior policemen/women	19(20.9%)	
	Assistant inspector	18(19.8%)	

Employment path	Inspector	29(31.9%)	91
	Senior inspector	14(15.4%)	
	Superintendent	10(11.0%)	
	General recruitment	75(82.4%)	
	Special recruitment	5(5.5%)	
	Police academy	2(2.2%)	
	Police cadet	9(9.9%)	
	Other	0(0.0%)	
The total length of service as a police officer	5 years and less	13(14.3%)	91
	6-10 years	32(35.2%)	
	11-15 years	13(14.3%)	
	16-20 years	13(14.3%)	
	Longer than 20 years	20(22.0%)	
The length of service at the security department	2 years and less	16(17.6%)	91
	3-5 years	56(61.5%)	
	6-10 years	17(18.7%)	
	Longer than 10 years	2(2.2%)	
The number of police officers in the organization	10 or less	18(19.8%)	91
	11-15	42(46.2%)	
	16-20	24(26.4%)	
	More than 21	7(7.7%)	
Service location	Tier 1 areas(big cities)	80(87.9%)	91
	Tier 2 areas(small/medium-sized cities)	11(12.1%)	
	Tier 3 areas(rural areas)	0(0.0%)	

## 2.2. Measuring instrument

The appropriate method for each verification method was chosen to increase the content validity and verify the construct validity of the questionnaire. Content validity was validated through consultation with relevant experts to adopt survey questions suitable for the purpose of the study, and the reliability of the survey questions was shown to be Cronbach's  $\alpha$  coefficient .951.

**Table 2.** The questions.

	Questions
Q-1	What I'm doing is important to me.

Q-2	Activities related to my duties are meaningful to me.
Q-3	What I'm doing is meaningful to me.
Q-4	What I am doing has important implications for our department's work.
Q-5	What I am doing now will be very helpful in achieving my future goals.
Q-6	I am confident about my ability to perform my duties.
Q-7	I am confident about my ability to perform my duties.
Q-8	I am skilled in the technical knowledge necessary for my duties.
Q-9	I am confident that I have successfully achieved my department's objectives.
Q-10	I have the ability to handle difficult tasks successfully.
Q-11	I almost autonomously decide how to perform my duties.
Q-12	I have the ability to decide for myself how to carry out my work.
Q-13	I have considerable independence and discretion in performing my duties.
Q-14	I decide on my own goals for the job.
Q-15	I choose the ways I need to perform my duties.
Q-16	My influence on what happens in my department is great.
Q-17	I can control many things that happen in my department.
Q-18	I can influence what is happening in my department.
Q-19	I can exert considerable influence on the determination and modification of how my department performs its duties.
Q-20	I can exert considerable influence on the achievement of my department objectives.

### 2.3. Data processing and analysis method

The data processing of this study was performed by using the SPSS 23.0, a statistical package program, to perform statistical verification for the purpose of data analysis as follows:

First, frequency analysis was conducted to identify general characteristics using the SPSS/PC+23.0 program.

Second, Cronbach's  $\alpha$  coefficient was calculated for the reliability verification of the questionnaire.

Third, One Way ANOVA was implemented to find out the difference in impressions depending on the total working period of the police.

Fourth, One Way ANOVA was implemented to find out the difference in the impressions depending on the working period of the security department.

### 3. Research Results

#### 3.1. Differences in empowerment over the total length of service for the police

**Table 3.** Results of the analysis of the difference between the empowerment according to the total working period of the police.

		N	M	SD	F	sig	Post hot
Q-1	Less than 5years	13	3.6923	.48038	1.083	.370	
	More than 6~ less than 10	32	4.0000	.35921			
	More than 11~ less than 15	13	3.9231	.49355			
	More than 16~ less than 20	13	3.8462	.37553			
	More than 20 years	20	4.0000	.72548			
Q-2	Less than 5years	13	3.6923	.48038	.922	.455	
	More than 6~ less than 10	32	3.9063	.64053			
	More than 11~ less than 15	13	3.6154	.76795			
	More than 16~ less than 20	13	3.7692	.43853			
	More than 20 years	20	3.9500	.60481			
Q-3	Less than 5years	13	3.7692	.43853	1.039	.392	
	More than 6~ less than 10	32	3.8750	.49187			
	More than 11~ less than 15	13	3.8462	.68874			
	More than 16~ less than 20	13	3.9231	.49355			
	More than 20 years	20	4.1000	.44721			
Q-4	Less than 5years	13	3.6923	.48038	.495	.740	
	More than 6~ less than 10	32	3.7188	.68318			
	More than 11~ less than 15	13	3.7692	.72501			
	More than 16~ less than 20	13	3.7692	.43853			
	More than 20 years	20	3.9500	.68633			
Q-5	Less than 5years	13	3.7692	.59914	2.324	.063	
	More than 6~ less than 10	32	3.6250	.65991			
	More than 11~ less than 15	13	3.0769	.49355			
	More than 16~ less than 20	13	3.5385	.66023			
	More than 20 years	20	3.7000	.80131			
Q-6	Less than 5years	13	3.4615	.77625	.400	.808	



	More than 6~ less than 10	32	3.5313	.62136			
	More than 11~ less than 15	13	3.4615	.66023			
	More than 16~ less than 20	13	3.5385	.51887			
	More than 20 years	20	3.7000	.65695			
Q-7	Less than 5 years	13	3.0769	.64051	1.727	.151	
	More than 6~ less than 10	32	3.2813	.68318			
	More than 11~ less than 15	13	3.5385	.66023			
	More than 16~ less than 20	13	3.5385	.66023			
	More than 20 years	20	3.6000	.68056			
Q-8	Less than 5 years	13	2.7692	.72501	5.067	.001	E>A,B C,D>A
	More than 6~ less than 10	32	3.0313	.73985			
	More than 11~ less than 15	13	3.2308	.83205			
	More than 16~ less than 20	13	3.5385	.66023			
	More than 20 years	20	3.7000	.47016			
Q-9	Less than 5 years	13	3.0000	.91287	2.205	.075	
	More than 6~ less than 10	32	3.1563	.80760			
	More than 11~ less than 15	13	3.3077	.75107			
	More than 16~ less than 20	13	3.2308	.72501			
	More than 20 years	20	3.7000	.57124			
Q-10	Less than 5 years	13	3.0769	.86232	1.877	.122	
	More than 6~ less than 10	32	3.1250	.70711			
	More than 11~ less than 15	13	3.3077	.75107			
	More than 16~ less than 20	13	3.3077	.63043			
	More than 20 years	20	3.6500	.74516			
Q-11	Less than 5 years	13	3.0000	.81650	4.274	.003	E>B
	More than 6~ less than 10	32	2.7500	.80322			
	More than 11~ less than 15	13	3.0769	1.03775			
	More than 16~ less than 20	13	3.1538	.55470			
	More than 20 years	20	3.7000	.80131			
Q-12	Less than 5 years	13	2.6154	.65044	4.351	.003	E>A,B
	More than 6~ less than 10	32	2.7813	.75067			
	More than 11~ less than 15	13	2.9231	.95407			
	More than 16~ less than 20	13	2.9231	.75955			
	More than 20 years	20	3.6000	.82078			

Q-13	Less than 5years	13	2.6154	.76795	4.032	.005	E>A,B
	More than 6~ less than 10	32	2.6250	.79312			
	More than 11~ less than 15	13	2.7692	1.01274			
	More than 16~ less than 20	13	2.9231	.95407			
	More than 20 years	20	3.5500	.88704			
Q-14	Less than 5years	13	2.6923	.85485	4.523	.002	E>B
	More than 6~ less than 10	32	2.5313	.76134			
	More than 11~ less than 15	13	2.6923	.85485			
	More than 16~ less than 20	13	2.7692	.83205			
	More than 20 years	20	3.5000	.88852			
Q-15	Less than 5years	13	2.6923	.85485	3.728	.008	E>B
	More than 6~ less than 10	32	2.5313	.67127			
	More than 11~ less than 15	13	2.6923	.75107			
	More than 16~ less than 20	13	3.0769	1.11516			
	More than 20 years	20	3.4000	.94032			
Q-16	Less than 5years	13	2.6923	.75107	2.921	.026	E>B
	More than 6~ less than 10	32	2.5313	.67127			
	More than 11~ less than 15	13	2.6154	.86972			
	More than 16~ less than 20	13	3.0000	1.08012			
	More than 20 years	20	3.3000	.97872			
Q-17	Less than 5years	13	2.5385	.87706	2.745	.033	E>B
	More than 6~ less than 10	32	2.6250	.87067			
	More than 11~ less than 15	13	2.5385	.77625			
	More than 16~ less than 20	13	2.7692	.92681			
	More than 20 years	20	3.3500	.98809			
Q-18	Less than 5years	13	2.3846	.76795	5.847	.000	E>A,B,C
	More than 6~ less than 10	32	2.5000	.67202			
	More than 11~ less than 15	13	2.6923	.75107			
	More than 16~ less than 20	13	2.7692	.83205			
	More than 20 years	20	3.5000	1.00000			
Q-19	Less than 5years	13	2.3077	.63043	8.113	.000	E>A,B,C
	More than 6~ less than 10	32	2.4063	.55992			
	More than 11~ less than 15	13	2.5385	.51887			
	More than 16~ less than 20	13	2.8462	.80064			

	More than 20 years	20	3.4000	.88258			
Q-20	Less than 5 years	13	2.4615	.77625	5.226	.001	E>A,B
	More than 6~ less than 10	32	2.4688	.62136			
	More than 11~ less than 15	13	2.7692	.72501			
	More than 16~ less than 20	13	2.8462	.89872			
	More than 20 years	20	3.4000	.88258			

Note: A: less than 5 years, B: more than 6~less than 10, C: more than 11~less than 15, D: more than 16~less than 20, E: more than 20 years.

The differences in impressions according to the total length of service for the police were significant in Q-8, Q-11, Q-12, Q-13, Q-14, Q-15, Q-16, Q-17, Q-18, Q-19, and Q-20.

Specifically, Q-8 showed that more than 20 years were higher than 5 years, 6 years to 10 years, and 11 years to 15 years and 16 years to 20 years were higher than 5 years. Q-11, Q-14, Q-15, Q-16, and Q-17 showed that more than 20 years were higher than 6 to 10 years. Q-12, Q-13, and Q-20 showed that more than 20 years were higher than 5 years and 6 years to 10 years. Q-18 and Q-19 showed that more than 20 years were higher than 5 years, 6 years to 10 years, and 11 years to 15 years.

### 3.2. Differences in the empowerment according to the working period of the security department

**Table 4.** Result of analysis of the difference in the empowerment according to the working period of the security department.

		N	M	SD	F	sig	post hot
Q-1	Less than 2 years	16	3.8750	.50000	.409	.747	
	More than 3~ less than 5	56	3.9643	.46571			
	More than 6~ less than 10	17	3.8235	.63593			
	More than 10 years	2	4.0000	.00000			
Q-2	Less than 2 years	16	3.7500	.57735	.473	.702	
	More than 3~ less than 5	56	3.8750	.66230			
	More than 6~ less than 10	17	3.7059	.46967			
	More than 10 years	2	4.0000	.00000			
Q-3	Less than 2 years	16	3.8125	.54391	.584	.627	
	More than 3~ less than 5	56	3.9643	.53815			
	More than 6~ less than 10	17	3.8235	.39295			
	More than 10 years	2	4.0000	.00000			
Q-4	Less than 2 years	16	3.6875	.60208	.349	.790	
	More than 3~ less than 5	56	3.8214	.66352			
	More than 6~ less than 10	17	3.7059	.58787			
	More than 10 years	2	4.0000	.00000			

Q-5	Less than 2 years	16	3.6875	.60208	.523	.668	
	More than 3~ less than 5	56	3.5179	.68732			
	More than 6~ less than 10	17	3.5882	.79521			
	More than 10 years	2	4.0000	.00000			
Q-6	Less than 2 years	16	3.6250	.71880	.533	.661	
	More than 3~ less than 5	56	3.5000	.63246			
	More than 6~ less than 10	17	3.5882	.61835			
	More than 10 years	2	4.0000	.00000			
Q-7	Less than 2 years	16	3.3125	.79320	.683	.565	
	More than 3~ less than 5	56	3.3750	.67588			
	More than 6~ less than 10	17	3.4706	.62426			
	More than 10 years	2	4.0000	.00000			
Q-8	Less than 2 years	16	2.9375	.77190	4.388	.006	C>A,B
	More than 3~ less than 5	56	3.1607	.75743			
	More than 6~ less than 10	17	3.7059	.46967			
	More than 10 years	2	4.0000	.00000			
Q-9	Less than 2 years	16	3.1875	.91059	1.056	.372	
	More than 3~ less than 5	56	3.2321	.80884			
	More than 6~ less than 10	17	3.4706	.51450			
	More than 10 years	2	4.0000	.00000			
Q-10	Less than 2 years	16	3.1250	.80623	1.248	.297	
	More than 3~ less than 5	56	3.2500	.74468			
	More than 6~ less than 10	17	3.4706	.71743			
	More than 10 years	2	4.0000	.00000			
Q-11	Less than 2 years	16	2.6875	.70415	2.514	.064	
	More than 3~ less than 5	56	3.1071	.88787			
	More than 6~ less than 10	17	3.3529	.86177			
	More than 10 years	2	4.0000	.00000			
Q-12	Less than 2 years	16	2.6250	.80623	2.913	.039	
	More than 3~ less than 5	56	2.9464	.81842			

	More than 6~ less than 10	17	3.2941	.84887			
	More than 10 years	2	4.0000	.00000			
Q-13	Less than 2 years	16	2.5625	.81394	3.481	.019	
	More than 3~ less than 5	56	2.8036	.90292			
	More than 6~ less than 10	17	3.3529	.93148			
	More than 10 years	2	4.0000	.00000			
Q-14	Less than 2 years	16	2.4375	.62915	3.780	.013	C>A
	More than 3~ less than 5	56	2.7679	.89425			
	More than 6~ less than 10	17	3.2353	.90342			
	More than 10 years	2	4.0000	.00000			
Q-15	Less than 2 years	16	2.5000	.73030	2.012	.118	
	More than 3~ less than 5	56	2.8214	.91666			
	More than 6~ less than 10	17	3.1765	.88284			
	More than 10 years	2	3.5000	.70711			
Q-16	Less than 2 years	16	2.5625	.72744	1.807	.152	
	More than 3~ less than 5	56	2.7857	.92862			
	More than 6~ less than 10	17	2.9412	.82694			
	More than 10 years	2	4.0000	.00000			
Q-17	Less than 2 years	16	2.4375	.81394	2.125	.103	
	More than 3~ less than 5	56	2.7857	.92862			
	More than 6~ less than 10	17	2.9412	.96635			
	More than 10 years	2	4.0000	.00000			
Q-18	Less than 2 years	16	2.3750	.71880	4.001	.010	C>A
	More than 3~ less than 5	56	2.7143	.82494			
	More than 6~ less than 10	17	3.1765	1.01460			
	More than 10 years	2	4.0000	.00000			
Q-19	Less than 2 years	16	2.2500	.57735	6.206	.001	C,D>A
	More than 3~ less than 5	56	2.6429	.72434			
	More than 6~ less than 10	17	3.1176	.85749			
	More than 10 years	2	4.0000	.00000			

Q-20	Less than 2 years	16	2.3125	.60208	7.388	.000	D>A C>A,B
	More than 3~ less than 5	56	2.6786	.76532			
	More than 6~ less than 10	17	3.3529	.86177			
	More than 10 years	2	4.0000	.00000			

Note: A: less than 2 years, B: more than 3~less than 5, C: more than 6~less than 10, D: more than 10 years.

The differences in the impressions of security officers over their working periods were significant in Q-8, Q-14, Q-18, Q-19, and Q-20.

Specifically, Q-8 showed that 6 to 10 years were higher than 2 years and 3 to 5 years. Q-14 and Q-18 showed that 6 to 10 years were higher than 2 years. Q-19 showed that more than six to ten years and more than ten years were higher than two years. Q-20 showed that more than 10 years were higher than 2 years, and 6 years more than 10 years were higher than 2 years, 3 years more than 5 years.

## 4. Discussion and Conclusion

The differences in impressions according to the total length of service for the police were significant in Q-8, Q-11, Q-12, Q-13, Q-14, Q-15, Q-16, Q-17, Q-18, Q-19, and Q-20. Specifically, there were significant differences in terms of work capability, self-determination, and work influence, and in common, the longer the total working period of the police, the higher the impact.

There were significant differences in Q-8, Q-14, Q-18, Q-19, and Q-20. Specifically, there were significant differences in terms of work capability, self-determination, and work influence, and in common, the longer the total working period of the police, the higher the impact. The conclusion derived from these results showed that the longer the working period, the higher the power, and the results of the total working period of the police and the security department showed very similar significance except for some questions. In addition, it can be seen that the longer the service period, the more positive and significant the impact of the police officer, the more positive the ability, self-determination, and work influence of the police officer are being applied to the longer the service period is.

Therefore, efforts to improve the working environment and organizational culture must be made to improve the importance of police activities. Furthermore, measures for psychological and economic stability of police officials must be taken together to ensure a long working period[16][17]. This will not only help improve the national security services but also improve crime prevention and response activities for the safety of the people[18][19][20].

## 5. References

### 5.1. Journal articles

- [1] Lee KH. An Examination of Community Police Officers' Crime Victimization and Fear of Crime Victimization. *The Korean Association of Police Science Review*, 11(4), 285-308 (2009).
- [2] Park JS. A Study on Cognitive Difference of Customer Orientation in the Groups of Police Officers. *Journal of Korean Public Police and Security Studies*, 8(2), 209-231 (2011).
- [3] Lee HS. A Study on Relationship of the Team Leadership, Empowerment and Organization Effectiveness of Police. *Journal of Korean Public Police and Security Studies*, 8(2), 185-208 (2011).
- [4] Lee KH. A Study on the Effects of Job Characteristics on the Empowerment in Maritime Police Officers. *The Korean Association of Police Science Review*, 15(1), 205-228 (2013).



- [5] Park CW & Yang MS. An Exploratory Study on the Relationship of Organizational Citizenship Behavior of Police Officer, Empowerment and Customer Orientation. *Journal of the Korea Society of Computer and Information*, 13(5), 309-314 (2008).
- [6] Im MH. A Study on the Relationship between Supervisors Delegation of Authority and Subordinates Job Attitudes. *The Journal of Police Science*, 6(3), 179-217 (2006).
- [7] You JD. Psychological Empowerment and Organizational Citizenship Behavior Relationship of Police Officers: Control Variable of LMX. *The Police Science Journal*, 10(3), 39-64 (2015).
- [8] Lee SG. A Study on the Impact of Police Officers Empowerment on the Job Satisfaction. *The Korean Association of Police Science Review*, 5(2), 243-269 (2003).
- [9] Lee SG. A Study on the Empowerment Improvement in Police Organization. *Korean Journal of Public Safety and Criminal Justice*, 15, 145-172 (2003).
- [10] Jung SH. Psychological Empowerment and Innovative Work Behavior. *Public Policy Review*, 22(1), 107-131 (2008).
- [11] Kim PS & Cho CK. Influences of Empowerment Elements of Police Officers on Organizational Performance. *The Journal of Humanities and Social Science*, 6(4), 761-778 (2015).
- [12] Jo SG. The Policies of South Korea's Counter Intelligence Agency on North Korea's Espionage Activities in South Korea. *International Journal of Protection, Security & Investigation*, 3(2), 30-35 (2018). [\[Article\]](#)
- [13] Jang JS. A Meta Analysis of Influencing Factors of Police Performance. *The Journal of Police Science*, 20(2), 61-92 (2020).
- [15] Jo EJ & Im H. The Mediating Effect of Job Satisfaction between Psychiatric Social Worker's Empowerment and Job Characteristics. *Social Science Research Review*, 25(4), 323-345 (2009).
- [16] Youn H & Nam J & Jo S. Differences in Leaders' Followership in the Korean Security Police Organization according to Gender and Age. *International Journal of Police and Policing*, 5(2), 24-34 (2020). [\[Article\]](#)
- [17] Yun WS & Kim JH. What Makes People Satisfy the Police?. *International Journal of Police and Policing*, 5(2), 11-23 (2020). [\[Article\]](#)
- [18] Baek S & Jo S & Lee C. Police Stress by Gender and Age. *Public Value*, 6(2), 20-27 (2021). [\[Article\]](#)
- [19] Baek S & Jo S & Lee C. Human & Disaster: The Stress of Police Officers in Respect to Educational Background and Employment Path. *International Journal of Human & Disaster*, 6(2), 11-20 (2021). [\[Article\]](#)
- [20] Baek S & Jo S & Lee C. Verification of Differences between the Number of Employees in the Organization and the Service Locations on the Stress of the Korean Security Police. *International Journal of Terrorism & National Security*, 6(1), 34-44 (2021). [\[Article\]](#)

## 5.2. Thesis degree

- [14] Lee JK. Study on the Influence of the Empowerment upon the Organizational Effectiveness, Focused on Public Officials at Gangwon Province. Gangwon National University, Master's Thesis (2013).

## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	SJ	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/>
Corresponding Author*	CL	-Make a significant contribution to collection <input checked="" type="checkbox"/> -Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	SJ	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

## 6.2. Funding agency

This work was supported by Kyungwoon University Research Grant in 2021.

Publisher: J-INSTITUTE  
ISSN: 2189-7603

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: bshong@chu.ac.kr

DOI Address:  
dx.doi.org/10.22471/crisis.2021.6.3.34

© 2021 J-INSTITUTE

## Current Status of COVID-19 Outbreak and Vaccination in the Republic of Korea

Myoungryu Kim<sup>1</sup>

Cheju Halla University, Jeju, Republic of Korea

Jueun Kwon<sup>2</sup>

Cheju Halla University, Jeju, Republic of Korea

Boksil Hong<sup>3\*</sup>

Cheju Halla University, Jeju, Republic of Korea

### Abstract

**Purpose:** This study examines the current status of COVID-19 vaccination in the Republic of Korea. Therefore, we investigate the currently approved COVID-19 vaccines and their properties, COVID-19 vaccine prioritization guidance and timeline, and the status of adverse events after the COVID-19 vaccination. Moreover, we examine the SARS-CoV-2 variants and the current prevalent variants in the Republic of Korea.

**Method:** This study was conducted on Web-based searches about the latest updates COVID-19 from the World Health Organization, Korea Centers for Disease Control and Prevention, and the Ministry of Food and Drug Safety. In addition, we searched for the "COVID-19 OR vaccines" in PubMed and then reviewed the selected articles regarding COVID-19 vaccines, prioritization guidance, adverse effects, and variants.

**Results:** To date, 4 COVID-19 vaccines have been received regulatory approval in the Republic of Korea. To promote stable COVID-19 vaccination, the COVID-19 Vaccination Promotion Task Force announced the order of COVID-19 vaccine distribution and vaccination schedules from the first and the third quarter of 2021, intending to complete the first dose of vaccination in 70% of the country's population by the end of September 2021. Currently, a total of 20,169,592 vaccine doses have been administered until August 02, 2021, representing 38.9% of the total population, and 7,289,659 individuals (about 14.1% of the country's population) have been fully vaccinated so far. In total, 0.49% (105,937 cases) of individuals who were vaccinated reported adverse effects. Among them, 94.9% were general adverse reactions, and 5.1% were severe adverse effects, including death and suspected anaphylaxis (severe allergic reactions). Recently, Delta variant is significantly expanding since June, and it is currently the predominant strain of the virus in the Republic of Korea.

**Conclusion:** Since June 12, the highest Social Distancing Level 4 has been implemented in the Seoul Metropolitan Area. With COVID-19 vaccination, we need to cooperate with antivirus measures and cancel unnecessary social gatherings to protect ourselves from the persistent infectious disease.

**[Keywords]** Approved COVID-19 Vaccines, COVID-19 Vaccine Prioritization, COVID-19 Vaccination Schedules, Adverse Reactions, SARS-CoV-2 Variants

## 1. Introduction

After the first description of 41 patients in Wuhan, China, World Health Organization (WHO) announced the term "coronavirus disease 2019 (COVID-19)" as the name of the new disease, and the International Committee on Taxonomy of Viruses adopted the official name "severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)" as the virus responsible for COVID-19 on February 11, 2020 [1]. Since WHO declared the disease a "pandemic" on March 11, 2020 [1], there have been 198,778,175 confirmed cases of COVID-19 and 4,235,559 deaths globally, reported by WHO until August 03, 2021 [2]. In the Republic of Korea, a total of 203,926 confirmed cases and 2,106 deaths have been reported as of 12 am on August 04, 2021 [3].

Over the 18 months of the COVID-19 pandemic, stepwise strategies and plans for social distancing and the K-quarantine system have been implemented to stop the spread of contagious disease[4][5][6][7][8][9]. In addition, enormous efforts to gain insights into the innate and adaptive immune responses against SARS-CoV-2 have brought to the development of multiple vaccines against the virus[10]. However, the confirmed cases of COVID-19 are still rising, continuing higher levels of social distance. Therefore, reporting the current situation of COVID-19 and vaccination status is necessary for public health. The present study summarized the brief overview of the approved COVID-19 vaccines, the COVID-19 vaccine prioritization guidance and timeline, and the status of adverse events after the COVID-19 vaccination. Moreover, we investigated the emergence of SARS-CoV-2 variants and the current prevalent variants in the Republic of Korea.

## 2. Methods

We searched for the keywords “COVID-19 OR vaccines” in PubMed until July 15, 2021, and then we reviewed the articles related to COVID-19 vaccines, prioritization guidance, adverse effects, and various variants of concern. In addition, we searched the latest updated COVID-19 from WHO, Korea Centers for Disease Control and Prevention(KCDC), and the Ministry of Food and Drug Safety(MFDS).

## 3. Results

### 3.1. Brief overview of approved COVID-19 vaccine in the Republic of Korea

Shortly after SARS-CoV-2 emerged, the spike(S) protein of viral surface protein was identified as the immune-dominant antigen of the virus by binding to the angiotensin-converting enzyme 2 on the surface of human cells[11]. Since then, many COVID-19 vaccine candidates were designed to use S protein as an agent capable of inducing immune responses using several different platforms[12]. According to the landscape document from the WHO, Vaccine candidates can be divided into three broad categories; protein-based vaccines, gene-based vaccines, and combinations of both protein- and gene-based approaches[1]. For example, BNT162b2 mRNA COVID-19 vaccine manufactured by Pfizer and BioNTech has first received a temporary emergency use authorization in the UK for active immunization to prevent COVID-19.

To date, 4 COVID-19 vaccines have been received regulatory approval by MFDS[13] in the Republic of Korea, and their antigen, dose, and efficacies were summarized. As shown in the following <Table 1>, the AstraZeneca/Oxford has used chimpanzee adenovirus vector, and Janssen vaccine has adenovirus serotype 26 vector platform. In contrast, Pfizer and Moderna vaccines are mRNA-based vaccines using lipid nanoparticles. Regarding the efficacy, Pfizer/BioNTech announced the mRNA vaccine efficacy of more than 90%[14], and Moderna was followed to report a 94% efficacy for their mRNA vaccine[15]. The viral vector from AstraZeneca showed overall vaccine efficacy of 70.4%[16], and the single-shot vaccine of Johnson showed 72% efficacy[17]. Overall, four COVID-19 vaccines have currently been used to booster active immunization against COVID-19 according to the vaccine prioritization guidance <Table 2>.

**Table 1.** SARS-CoV-2 vaccines approved in South Korea.

Vaccine	Manufacturer	Type	Antigen	Dose	Efficacy	Approval date

					1 dose	2 dose	KFDA	FDA	UK
ChAdOX1 nCoV-19 (AZS1222)	Astra- Zeneca /Oxford (UK)	Viral vector	Replication-deficient adenoviral vector with the SARS-CoV-2 S protein	5x10 <sup>10</sup> vial particles (2 doses)	64.1%	70.4%	2021- 02-10	-	2020- 12-30
BNT162b2	Pfizer/ BioNTech (US)	mRNA	Full length S protein with proline substitutions	30 µg (2 doses)	52%	94.6%	2021- 03-05	2020- 12-11	2020- 12-02
Ad26. CoV2.S	Janssen Biotech (US)	Viral vector	Recombinant, replication-incompetent adenoviral vector encoding full-length, stabilized SARS-CoV-2 S protein	5x10 <sup>10</sup> vial particles (1 dose)	72%		2021- 04-07	2021- 02-27	2021- 05-28
mRNA- 1273	Moderna (US)	mRNA	Full length S protein with proline substitutions	100 µg (2 doses)	92.1%	94.1%	2021- 05-21	2021- 01-06	2021- 01-08

### 3.2. COVID-19 vaccine prioritization guidance and timeline in the Republic of Korea

After the first approval of Pfizer vaccine on December 02, 2020, the UK became the first country in the world to start COVID-19 vaccination using Pfizer vaccine. Given the limited supply of vaccine worldwide, COVID-19 Vaccines Global Access Facility(COVAX) is working for global equitable access to COVID-19 vaccine at least 20% of countries' population[18]. In addition, to support countries in planning, WHO Strategic Advisory Group of Experts on Immunization(SAGE) suggested the roadmap for allocation and prioritization of the uses of COVID-19 vaccines by providing six core principles; human well-being, equal respect, global quality, national equity, reciprocity and legitimacy[19]. With the first priorities for the prevention of COVID-19 mortality and the protection of health and social care staff and systems, several groups(age, older adult residents in care homes, health and social care workers, clinically extremely vulnerable, pregnancy, and children) have been considered for the order of vaccination[20][21].

In the Republic of Korea, the COVID-19 Vaccination Promotion Task Force was newly formed to quickly introduce the COVID-19 vaccine and promote stable vaccination on January 08, 2021. In order to support vaccinated person's recovery back to daily life, the Korean government announced the COVID-19 vaccination guideline and the order of vaccine distribution considering the risk of spreading the disease, medical/quarantine/disinfection systems, social security, and the transmission of disease, which was advised by Korea advisory Committee on Immunization Practices(KACIP)[22][23]. Regarding the disease severity, the fatality rate of the elderly aged ≥ 80 years showed the highest rate with 20.24%, as of January 24, 2021. The overarching goals of COVID-19 vaccination are prevention of disease severity and deaths, maintenance of the essential functions of health services, quarantine and society, and prevention of transmission in local communities. The target subjects in each group were listed in <Table 2>.

**Table 2.** The order of COVID-19 vaccine distribution.

Group	Goal	Subjects
-------	------	----------

A	Reduce severity and deaths	Elderly in long-term care facility residents and workers
		Elderly home welfare facility users and residents
		Adults aged ≥65 years
		Patients with chronic diseases
		Adults aged 50-64 years
B	Maintain the essential functions of health services, quarantine, and society	Frontline health care workers who treat COVID-19 patients
		Health care workers at high risk
		Frontline emergency responders
		Health care workers in medical institutions and pharmacy workers
		Essential social workers outside the health sector(soldiers, police officers, firefighters, infrastructure workers)
C	Block transmission(mas infection) in the local community	Group facility residents and workers(other than the elderly)
		Childcare providers, education workers for children and adolescents
		Adults aged 18-49 years
D	Exclusion from vaccination*	Children and adolescents
		Pregnant women

Note: \* Can be added depending on clinical results.

Since December 08 of last year, a total of 3,886,112,928 vaccine doses have been administered globally until August 02, 2021, reported by WHO[1]. According to the COVID-19 vaccination program from the first quarter to the third quarter of 2021, as illustrated in <Table 3>, a total of 20,169,592 vaccine doses have been administered in the Republic of Korea until August 02, 2021, representing 38.9% of the total population[22]. Overall, a total of 7,289,659 individuals or about 14.1% of the country's population, have been fully vaccinated so far. As shown in <Table 1> and <Table 3>, the AstraZeneca/Oxford vaccine was first approved on February 10, 2021 from MFDS, and a 54-years old elderly caregiver received the AstraZeneca vaccine on February 26, as the first case of COVID-19 vaccine in the Republic of Korea. The Pfizer vaccine was followed to receive approval on February 03, 2021, and vaccination using Pfizer vaccine began on February 27, 2021. As the United States sent 1 million shots of Janssen vaccines for the Korean military, Janssen vaccine has started to use for military reserve forces on January 10, 2021. The recently approved Moderna vaccine on May 21, 2021, has begun to receive from June 14, 2021. To return to daily life and to encourage vaccine uptake, COVID-19 vaccination using all currently authorized and recommended COVID-19 vaccines is in progress according to the COVID-19 Vaccination Schedules in regard to the supply of vaccines to complete the first dose vaccination for 36 million(70% of country population) by the end of September, 2021. In addition to the following schedules in Table 3, customized plans for seniors in their 50s, the young, and unvaccinated individuals in blind spots have been implemented for the prevention of disease transmission.

**Table 3.** COVID-19 vaccination schedules from the first to the third quarter of 2021.

Group	Recipients	Date
	Elderly in long-term care facility residents and workers aged < 65 years	Feb. 26

Elderly care facility, medical institutions (above hospital level)	Elderly in long-term care facility residents and workers aged $\geq 65$ years	Mar. 23
	Health care workers(above hospital level) aged $< 65$ years	Mar. 04
	Health care workers(above hospital level) aged $\geq 65$ years	Mar. 26
	Hospital for COVID-19 treatment	Feb. 27
Residents and workers in facilities vulnerable to COVID-19	Facilities for elderly	Apr. 01
	Disabled facilities/Elderly care communal living family	Apr. 12
	Facilities for tuberculosis and Hansen/Homeless	Apr. 12
	Workers in correctional facilities	Apr. 12
	Vising care workers for socially vulnerable	Apr. 19
Health adults aged $\geq 60$ years	Adults aged $\geq 75$ years	Apr. 01
	Adults aged 65-74 years	May. 27
	Adults aged 60-64 years	Jun. 07
School and child care center	Specific education workers and public health teacher	Apr. 12
	Daycare center workers specializing in children with disabilities	Apr. 12
	Teachers at daycare centers and elementary schools(1st and 2nd grade)	Jun. 07
Patients with chronic diseases	Patients with chronic kidney disease	Apr. 26
	Patients with chronic severe respiratory disease	May. 27
Health care and essential workers	COVID-19 first responder	Mar.0 8
	Health care workers in medical institutions and pharmacy workers, police officers, fire fighters etc.	Apr. 26
	Soldiers	Apr. 28
	Flight attendant	Apr. 19
Military personnel	Military reserve forces, civil defense officers, and military personnel aged $\geq 30$ years	Jun. 10
Education and health workers, high school students	Senior high school students preparing for college exam* and high school staff	Jul. 19
	Education and Health workers	Jul. 28
	Other students preparing for college exam*	Aug. 10#
Soldier	Enlisted soldiers	Jul. 12
Target by age	Adults aged 55-59 years	Jul. 26
	Adults aged 50-55 years	Aug. 16#
	Adults aged 18-49 years	Aug. 26#

Note: \* College scholastic ability test(CSAT), #scheduled date.



### 3.3. Status of adverse reactions after COVID-19 vaccination in the Republic of Korea(during 20 weeks)

Vaccines against COVID-19 have been considered as an effective method to protect individuals from infection and transmission and to overcome pandemic[24]. In addition to vaccines' efficacy and immunogenicity, the safety and side effects need to evaluate for public health. Any vaccine has been recognized to cause adverse reactions caused by active antigens in the vaccine, as well as residual non-human protein or preservative, such as excipients[25][26]. The most commonly reported side effects were the pain at the injection site, tiredness, headache, muscle pain, which typically lasted several days[27].

Korea Disease Control and Prevention Agency(KDCA) reported weekly about the adverse reactions after COVID-19 vaccination. <Table 4> shows the total number of vaccinations and the number of reports of adverse events from February 26 to July 17(20 weeks), reported on July 21, 2021[22]. According to the Infection Disease Control and Prevention Act, monitoring of adverse events after COVID-19 vaccination is based on the standard monitoring system[28]. In addition, it was reported as a suspected adverse reaction after the COVID-19 vaccination, and it was calculated based on information reported by medical institutions. Therefore, it does not suggest a causal relationship between COVID-19 vaccination and adverse events.

In total, 0.49%(105,937 cases) of individuals who were vaccinated reported adverse effects. The report rate by gender is 0.35% for men and 0.61% for women, with the higher reporting rate in women. In the case of age groups, the 30-39 age group showed the highest reporting rate with 0.75%, compared to other groups, 0.61% in 60-69 age group, 0.56% in 40-49 age group, 0.52% in 18-29 age group, 0.45% in 50-59 age group, 0.39% in 70-79 age group, and 0.26% in over 80 age group which was the lowest. Among them, 94.9%(100,576 cases) were general adverse reactions, including symptoms that commonly occur after vaccination, such as redness, pain, swelling, muscle pain, fever, headache, and chills at the injection site. Depending on the symptoms, 54.5~82.7% of general adverse reactions have lasted no longer than one day after vaccination. There were 5,361 cases(5.1%) of severe adverse reactions such as death and suspected anaphylaxis, as illustrated in <Table 4>. A total of 574 deaths, including changes in patient status after the first report date of adverse reaction(160 cases) have been reported(AstraZeneca 235, Pfizer 332, and Janssen 7) by July 17, 2021. There were 482 cases of suspected anaphylaxis(severe allergic reactions) and 4,641 cases of severe adverse events, such as acute paralysis, encephalopathy or encephalitis, convulsion, Guillain-Barre syndrome, osteomyelitis or osteomyelitis, and thrombocytopenia eclampsia. Overall, 0.025% of severe adverse effects, including death, have been reported, except mind to general adverse events. The estimated causes of death were ischemic heart disease, acute cardiac death, stroke, sepsis, and pneumonia. After the review of suspected cases after the COVID-19 vaccination, 131 cases were finally recognized as anaphylaxis.

**Table 4.** Severe adverse effects after COVID-19 vaccination(reported on July 21, 2021).

		Total number	Suspected anaphylaxis(%)	Severe adverse events(%)	Death(%)	Total(%)
Total	Total	22,620,419	482(0.002)	4,641(0.021)	427(0.002)	5,550(0.025)
	1st dose	16,891,553	428(0.003)	3,893(0.023)	303(0.002)	4,624(0.027)
	2nd dose	5,728,866	54(0.001)	748(0.013)	124(0.002)	926(0.016)
AstraZeneca	Total	11,494,373	273(0.002)	3,016(0.026)	178(0.002)	3,467(0.030)
	1st dose	10,404,145	256(0.002)	2,901(0.028)	167(0.002)	3,324(0.032)
	2nd dose	1,090,228	17(0.002)	115(0.011)	11(0.001)	143(0.013)
Pfizer	Total	9,917,585	158(0.002)	1,354(0.014)	242(0.002)	1,754(0.018)

	1st dose	5,294,416	121(0.002)	721(0.014)	129(0.002)	971(0.018)
	2nd dose	4,623,169	37(0.001)	633(0.014)	113(0.002)	783(0.007)
Janssen	Total	1,129,722	45(0.004)	264(0.023)	7(0.001)	316(0.028)
Moderna	Total	78,739	6(0.008)	7(0.009)	0(0.000)	13(0.017)
	1st dose	63,270	6(0.009)	7(0.011)	0(0.000)	13(0.021)
	2nd dose	15,469	0(0.000)	0(0.000)	0(0.000)	0(0.000)

Currently, the combination of COVID-19 vaccines has emerged as a way to address safety concerns and unexpected supply issues. As the Com-COV study suggested that the combination sometimes outperforms two shots of the same vaccine regardless of the administration order[29] [30], the cases of mix-and-match COVID-19 vaccination have been growing. In the Republic of Korea, out of 5,977,693 cases of fully vaccinated, there were 924,568 cases of combining other COVID-19 vaccines(1<sup>st</sup> shot: AstraZeneca, 2<sup>nd</sup> shot: Pfizer) with 0.28% of reported adverse events, which was similar ratios compared to homologs vaccination, as of July 31, 2021. After the second shot of COVID-19 vaccination, a total of 128 deaths(AstraZeneca-AstraZeneca 11, Pfizer-Pfizer 114, and AstraZeneca-Pfizer 3), 58 cases of suspected anaphylaxis, 787 cases of severe adverse reactions have been reported by July 31, 2021.

### 3.4. The emergence of SARS-CoV-2 variants and current prevalence of variants

With 18 months into the pandemic, the rapid development of the COVID-19 vaccine has been given hope against infectious disease, and we have expected to return to pre-COVID normal life without wearing a mask. Unfortunately, a slow mutation rate of SARS-CoV-2 was estimated from global phylogenies to accumulate two mutations per month[31]. On May 31, 2021 WHO announced labels for SARS-CoV-2 variants of interest and concern[1], and there are four SARS-CoV-2 variants of concern, as illustrated in <Table 5>. Since the monitoring and assessing the evolution of the virus since January 2020, the variants might increase in transmissibility or virulence, or decrease in public health effectiveness. <Table 5> describes key properties of SARS-CoV-2 variants, including mutations in spike protein. In addition, the variants make more contagious than the original virus with a higher R naught(RO) number, the way of comparing the biological spreading power of viruses. The RO number of the original virus was around 2.5 when the pandemic started. In contrast, the RO number of Alpha and Delta variants was 3, and between 5 to 8, respectively(source: Imperial College London, Lancet, Australian Government)[32].

**Table 5.** Overview of SARS-CoV-2 variants of concern.

WHO label	Pango lineages [33]	GISAID clade[34]	Nextstrain clade	Additional amino acid changes monitored*	Earliest documented samples(country, date)	Date of designation
Alpha	B.1.1.7	GRY	20I(V1)	+S:484K, +S:452R	United Kingdom, Sep. 2020	Dec. 18, 2020
Beta	B.1.351	GH/501Y.V2	20H(V2)	+S:L18F	South Africa, May. 2020	Dec. 18, 2020
	B.1.351.2					
	B.1.351.3					
Gamma	P.1	GR/501Y.V3	20J(V3)	+S:681H	Brazil, Nov. 2020	Jan. 11, 2021

	P.1.1					
	P.1.2					
	B.1.617.2					
Delta	AY.1	G/478K.V1	21A	+S:417N	India, Oct. 2020	May. 11 2021
	AY.2					
	AY.3					

Note: \* Notable spikes amino acid changes, GISAID(Global Influenza Surveillance and Response System)[1].

Delta is more contagious among the variants and increases transmissibility compared to other variants, even in fully vaccinated individuals[21]. It is 2.4-fold more infectious than the original virus and 1.6-fold more contagious compared to the Alpha variant. In the Republic of Korea, the detection rate of Delta has increased from 3.3%(fourth week of June) to 48.0 %(third week of July) and 61.5%(5<sup>th</sup> week of July). Therefore, Delta is significantly expanding since June, and it is currently the predominant strain of the virus in the Republic of Korea.

In a recent report from the National Evidence-based Healthcare Collaborating Agency(July 15, 2021)[35], the efficacy of current COVID-19 vaccines against infection showed a slight decreased in the variants compared to the original virus, with more than 80% efficacy to the variants when fully vaccinated[36][37]. In addition, the effectiveness of current vaccines was 78~96% at 1<sup>st</sup> shot and 86~96% at 2<sup>nd</sup> shot against hospitalization and death. Overall, if vaccinated, the efficacy showed no significant difference among the types of COVID-19 vaccines, as illustrated in <Table 6>.

**Table 6.** Efficacy of vaccines agents SARS-CoV-2 variants infection.

Manufacture	Efficacy against symptomatic infection			Efficacy against hospitalization and death		
	Alpha	Delta	Beta/Gamma	Alpha	Delta	Beta/Gamma
AstraZeneca	66.1~74%	60~88%	48%(1st shot)	86%	92%	83%(1st shot)
Pfizer	89~93.4%	79~88%	84%	95%	96%	95%
Moderna	92%	72%(1st shot)	77%(1st shot)	94%	96%(1st shot)	89%(1st shot)

## 4. Conclusion

In the present study, we examine the current status of the COVID-19 outbreak and vaccination in the Republic of Korea. To date, four types of COVID-19 vaccines have been received regulatory approval in the Republic of Korea. According to the roadmap for allocation and prioritization suggested by WHO, the COVID-19 Vaccination Promotion Task Force announced the order of COVID-19 vaccine distribution and vaccination schedules from the first and the third quarter of 2021, intending to complete the first dose of vaccination in 70% of the country's population by the end of September 2021. Currently, a total of 20,169,592 vaccine doses have been administered until August 02, 2021, representing 38.9% of the total population, and 7,289,659 individuals(about 14.1% of the country's population) have been fully vaccinated so far. In total, 0.49%(105,937 cases) of individuals who were vaccinated reported adverse effects. Among them, 94.9% were general adverse reactions, and 5.1% were severe adverse effects, including death and suspected anaphylaxis. As the combination of COVID-19 vaccines has been considered to control unexpected supply issues, the cases of mix-and-match COVID-19 vaccination have been growing in the

Republic of Korea. Out of 5,977,693 cases of fully vaccinated, there were 924,568 cases (15.47%) of combining other COVID-19 vaccines (1<sup>st</sup> shot: AstraZeneca, 2<sup>nd</sup> shot: Pfizer) with 0.28% of reported adverse events, which was similar ratios compared to homologs vaccination, as of July 31, 2021.

Since the monitoring and assessing the evolution of the virus since January 2020, several SARS-CoV-2 e variants have emerged with higher contagious than the original virus. Among them, Delta variant is 2.4-fold more infectious than the original virus and 1.6-fold more contagious compared to the Alpha variant with a higher RO number between 5 to 8. Unfortunately, Delta is significantly expanding since June, and it is currently the predominant strain of the virus in the Republic of Korea. Novel viral variants of concern may be resistant to infection and the immunity induced by the current vaccines. In addition to tracking the emergence of new variants, there are four major priorities to control the variants [38]. These priorities are to evaluate existing vaccines and developing modified vaccines for efficacy against variants, to reduce the risk that new variants will emerge, and to coordinate the international responses. The efficacy of current COVID-19 vaccines against infection showed a slight decreased in the variants compared to the original virus, with more than 80% efficacy to the variants when fully vaccinated [36][37]. As SARS-CoV-2 accumulates two mutations per month [31], the novel variant, including the Delta Plus variant, a sub-lineage of the Delta variant, might emerge getting 'fitter and faster' [38]. Therefore, the development of updated therapeutic strategies and diversified vaccine design against the challenges from SARS-CoV-2 variants need urgently to apply to neutralize the variant effectively [39]. In addition, we need to promote global collaboration for the development of next-generation COVID-19 vaccine against SARS-CoV-2 variants [40].

Since June 12, the highest Social Distancing Level 4 has been implemented in the Seoul Metropolitan Area. Due to continuous fatigues against COVID-19 and the summer vacation season, the number of confirmed cases of COVID-19 is still higher with the infection routes 48.6% of contact with the prior confirmed case, 27.9% of unknown, and 22.6% of regional group or local mass infection reported by Ministry of Health and Welfare (August 07, 2021). In the rising situation of COVID-19, analyzing the current status of COVID-19 outbreak and vaccination is essential for recipients for potential benefits and risks based on transparent and evidence-based communication. In addition, continuing the updated safety and adverse reaction data of COVID-19 vaccines will provide scientific development for understanding and defeating the devastating virus. With the participation in COVID-19 vaccination, we need to cooperate with antivirus measures and cancel unnecessary social gatherings to stop viral transmission further and protect ourselves from the persistent infectious disease.

## 5. References

### 5.1. Journal articles

- [4] Park IN & Yum HK. Stepwise Strategy of Social Distancing in Korea. *Journal of Korean Medical Science*, 35(28), 1-6 (2020).
- [5] Park G & Lee W & Lim Y. Covid-19 and Some Implications to AI. *Robotics & AI Ethics*, 5(1), 16-24 (2020). [\[Article\]](#)
- [6] Kim D. Government Roles of Policy Networks against Covid-19: Comparing Two Cases in S. Korea. *Protection Convergence*, 5(2), 14-26 (2020). [\[Article\]](#)
- [7] Cho H & Park S & Lim Y. Human Security Task and Prospect on Covid-19 Pandemic. *International Journal of Terrorism & National Security*, 5(2), 48-55 (2020). [\[Article\]](#)
- [8] Park G & Kim H & Li Y. Virtue for Post Covid-19 and AI Technology. *Robotics & AI Ethics*, 5(2), 8-18 (2020). [\[Article\]](#)
- [9] Lee S. Paradox of Covid-19 Pandemic Strengthening Neo-liberalist's Way of Global Governance Building to Overcome Vaccine Nationalism's Politics. *Regulations*, 6(2), 1-9 (2021). [\[Article\]](#)
- [10] Carvalho T & Krammer F & Iwasaki A. The First 12 Months of Covid-19: A Timeline of Immunological Insights. *Nature Reviews Immunology*, 21, 245-256 (2021).
- [11] Xia S & Zhu Y & Liu M & Lan Q & Xu W & Wu Y & Ying T & Lu S & Shi Z & Jiang S & Lu L. Fusion Mechanism of 2019-nCoV and Fusion Inhibitors Targeting HR1 Domain in Spike Protein. *Cellular &*

*Molecular Immunology*, 17, 765-767 (2020).

- [12] Angeli F & Spanevello A & Reboldi G & Visca D & Verdecchia P. SARS-CoV-2 Vaccines: Lights and Shadows. *European Journal of Internal Medicine*, 88, 1-8 (2021).
- [16] Voysey M & Clemens SAC & Madhi SA & Weckx L & Folegatti PM & Aley PK & Angus B & Baillie VL & Barnabas SL & Bhorat QE & Bibi S & Briner C & Ciconi P & Collins AM & Colin-Jones R & Cutland CL & Darton TC & Dheda K & Duncan CHA & Emary KRW & Ewer KJ & Fairlie L & Faust SN & Feng & Ferreira DM & Finn A & Goodman AL & Green CM & Green CA & Heath PT & Hill C & Hill H & Hirshe I & Hodgson SHC & Izu A & Jackson S & Jenkin D & Joe CCD & Kerridge S & Koean A & Kwatra G & Lazarus R & Lawrie AM & Lelliott A & Libri V & Lillie PJ & Mallory R & Mendes AVA & Milan EP & Minassian AM & McGregor A & Morrison H & Mujadidi YF & Nana A & O'Reilly PJ & Padayachee SD & Pittella A & Plested E & Pollock KM & Ramasamy MN & Rhead S & Schwarzbald AV & Singh N & Smitn A & Song R & Snape D & Sprinz E & Sutherland RK & Tarrant R & Thomson EC & ToroK ME & Toshner M & Turner DPJ & Vekemans J & Vilafana TL & Watson MEE & Williams CJ & Douglas AD & Hill AVS & Lambe T & Gilbert SC & Pollard AJ & Oxford Covid Vaccine Trial Group. Safety and Efficacy of the ChAdOx1 nCoV-19 Vaccine(AZD1222) against SARS-CoV-2: An Interim Analysis of Four Randomised Controlled Trials in Brazil, South Africa, and the UK. *Lancet*, 397, 99-111 (2021).
- [23] Noh EB & Nam HK & Lee H. Which Group Should be Vaccinated First?: A Systematic Review. *Infection & Chemotherapy*, 53, 261-270 (2021).
- [24] Turner PJ & Ansotegui IJ & Campbell DE & Cardona V & Ebisawa M & El-Gamal Y & Fineman S & Geller M & Gonzalez-Estrada A & Greenberger PA & Leung ASY & Levin ME & Muraro A & Borges MS & Senna G & Tanno LK & Thong BY & Worm M & WAO Anaphylaxis Commuittee. Covid-19 Vaccine-associated Anaphylaxis: A Statement of the World Allergy Organization Anaphylaxis Committee. *World Allergy Organ Journal*, 14, 100517 (2021).
- [25] Stone CA & Rukasin CRF & Beachkofsky TM & Phillips EJ. Immune-mediated Adverse Reactions to Vaccines. *British Journal of Clinical Pharmacology*, 85, 2694-2706 (2019).
- [26] Kim MA & Lee YW & Kim SR Kim JH & Kim TK & Park HS & Shin M & Ye YM & Lee S & Lee J & Choi JH & Jang GC & Chang YS. Covid-19 Vaccine-associated Anaphylaxis and Allergic Reactions: Consensus Statements of the KAAACI Urticaria/Angioedema/Anaphylaxis Working Group. *Allergy, Asthma & Immunology Research*, 13, 525-544 (2021).
- [27] Pormohammad A & Zarei M & Ghorbani S & Mohammadi M & Razizadeh MH & Turner DL & Turner RJ. Efficacy and Safety of Covid-19 Vaccines: A Systematic Review and Meta-analysis of Randomized Clinical Trials. *Vaccines(Basel)*, 9(5), 467-467 (2021).
- [28] Oh H & Lee Y & Kim T & Lee E & Park S. Status of Adverse Reactions after Covid-19 Vaccination in the Republic of Korea. *Public Health Weekly Report*, 14(19), 1092-1098 (2021).
- [29] Shaw RH & Stuart A & Greenland M & Liui X & Van-Tam JSN & Snape MD & Com-CoV Study Group. Heterologous Prime-boost Covid-19 Vaccination: Initial Reactogenicity Data. *Lancet*, 397, 2043-2049 (2021).
- [30] Lewis D. Mix-and-match Covid Vaccines: The Case is Growing, but Questions Remain. *Nautre*, 595, 344-345 (2021).
- [31] Gupta RK. Will SARS-CoV-2 Variants of Concern Affect the Promise of Vaccines?. *Nature Reviews Immunology*, 21, 340-341 (2021).
- [33] Rambaut A & Holmes EC & O'Toole A & Hill V & McCrone JT & Ruis C & Plessis L & Pybus OG. A Dynamic Nomenclature Proposal for SARS-CoV-2 Lineages to Assist Genomic Epidemiology. *Nature Microbiology*, 5, 1403-1407 (2001).
- [36] Sheikh A & McMenamin J & Taylor B & Robertson C & Public Health Scotland and the EAVE II Collaborators. SARS-CoV-2 Delta VOC in Scotland: Demographics, Risk of Hospital Admission, and Vaccine Effectiveness. *Lancet*, 397, 2461-2462 (2021).
- [38] Krause PR & Fleming TR & Longini IM & Peto R & Briand S & Heymann DL & Beral V & Snape MD & Rees H & Ropero A & Baicer RD & Cramer JP & Munoz-Fontela C & Gruber M & Gaspar R & Singh J & Subbarao K & Kerkhove MDV & Swaminathan S & Ryan MJ & Henao-Restrepo A. SARS-CoV-2 Variants and Vaccines. *New England Journal of Medicine*, 385, 179-186 (2021).

- [40] Zhou W & Wan W. Fast-spreading SARS-CoV-2 Variants: Challenges to and New Design Strategies of COVID-19 Vaccines. *Signal Transduction and Targeted Therapy*, 6, 226-226 (2021).
- [41] Li Q & Wang J & Tang Y & Lu H. Next-generation Covid-19 Vaccines: Opportunities for Vaccine Development and Challenges in Tackling Covid-19. *Drug Discoveries & Therapeutics*, 15(3), 118-123 (2021).

## 5.2. Additional references

- [1] <https://www.who.int/> (2020).
- [2] <https://covid19.who.int/> (2021).
- [3] <http://ncov.mohw.go.kr/> (2021).
- [13] <http://mfds.go.kr/> (2021).
- [14] <https://www.pfizer.com/> (2021).
- [15] <https://investors.modernatx.com/> (2021).
- [17] <https://www.jnj.com/> (2021).
- [18] <https://www.who.int/> (2020).
- [19] WHO SAGE Values Framework for the Allocation and Prioritization of COVID-19 Vaccination (2020).
- [20] <https://www.gov.uk/> (2020).
- [21] <https://www.cdc.gov/> (2021).
- [22] <https://ncv.kdca.go.kr/> (2021).
- [32] <https://bbc.com/> (2021).
- [34] <https://gisaid.org/> (2021).
- [35] <https://www.neca.re.kr/> (2021).
- [37] Nasreen S & Chung H & He S & Brow KA & Gubbay JB & Buchan SA & Fel DB & Austin PC & Schwartz KL & Sundaram ME & Galzavara A & Chen B & Tadrous M & Wilson K & Wilson SE & Kwong JC. Effectiveness of COVID-19 Vaccines against Variants of Concern in Ontario, Canada. *MedRxiv* (2021).
- [39] <https://news.un.org/> (2021).

## 6. Appendix

### 6.1. Authors contribution

	Initial name	Contribution
Lead Author	MK	-Set of concepts <input checked="" type="checkbox"/> -Design <input checked="" type="checkbox"/> -Getting results <input checked="" type="checkbox"/> -Analysis <input checked="" type="checkbox"/> -Make a significant contribution to collection <input checked="" type="checkbox"/>
Corresponding Author*	BH	-Final approval of the paper <input checked="" type="checkbox"/> -Corresponding <input checked="" type="checkbox"/> -Play a decisive role in modification <input checked="" type="checkbox"/>
Co-Author	JK	-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/> -Participants in Drafting and Revising Papers <input checked="" type="checkbox"/> -Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>



Publisher: J-INSTITUTE  
ISSN: 2189-7603

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: gosung2@hanmail.net

DOI Address:  
dx.doi.org/10.22471/crisis.2021.6.3.45

© 2021 J-INSTITUTE

## The Effect of Integral Movement Therapy Program with the Marian Chase Technique on Peer Relationship and Behavior of Deviation of the Students with Autism Spectrum Disorder for SAFETY

Sunghee Koh

Myongji University, Yongin, Republic of Korea

### Abstract

**Purpose:** The purpose of this study is to validate the effect of a movement therapy program applying the Marian Chase Technique on the peer relationship and behavior of deviation within the integral education for the non-disabled and disabled of the same age.

**Method:** In this study, the students without disability participated in the experiment to validate the effectiveness of the integral movement therapy program applying the Marian Chase Technique. A total of 12 movement therapy programs were carried out once per week from September 4, 2019 until November 27, 2019 for 3 students with disability and 7 students without disability who participated in the M University's movement therapy program.

**Results:** As a result of measuring the peer relationship of the movement therapy program in the integrated environment, and student A improved by 32 points from 2 points during the 1st round to 34 points during the 12th round, and student B increased by 8 points from 1 point during the 1st round to 9 points during the 12th round. Furthermore, student C improved by a total of 21 points from 11 points during the 1st round to 28 points during the 12th round. As a result of measuring the frequency of behavior of deviation by period through the movement therapy program, student A with disability decreased by 75% from 4 times during the 1st round to once during the last 12th round on average. Student C with disability decreased by 50% from 6 times during the 1st round to 3 times during the 12th round, and student B with disability decreased by 25% from 8 times during the 1st round to 6 times during the 12th round.

**Conclusion:** Consequently, it was evident that the effect of the movement therapy program for which the integral education was carried out has had an effect on the peer relationship and behavior of deviation of the children with mild autism. It is considered that the studies to develop an individualized movement therapy program for the students with autism demonstrating differences is needed.

**[Keywords]** Integral Movement Therapy Program, Marian Chase Technique, Peer Relationship, Behavior of Deviation, Safety

## 1. Introduction

The people with autistic developmental disorder have difficulties in communication and social interaction, in tandem with behavioral issues. Such developmental problems manifest due to a lack of social skills such as social maladaptation, and it is difficult to carry out their lives within a group[1]. Interactions with peers are considered to be crucial from an early age Since people learn behavioral skills to live as the members of society[2]. Notwithstanding the fact that it is very crucial for the people with autistic developmental disorder who do not have much experience in playing with their peers to learn social skills through their relationships with others, it is true that there exist very few opportunities for the interpersonal relation-



ships to be carried out due to a lack of social adaptability. Such problems of the children with autism make their relationships with peers even more difficult[3].

Such problematic behaviors of the students with disability have interfered with the integral education for the students without disability. Rather, however, the problematic behaviors turned out to have decreased as they formed relationships with their peers in an integrated environment[4]. In the field, it has been emphasized that social skills are improving through the integral education with the students with disability and the students without disability, and in the actual field of education, efforts are made to provide the disabled in special classes or special schools opportunities to form relationships with their peers through the integrated education[5].

It was viewed that the integral education can bring the development of social attitude and social interaction with peers required for the autistic students with disability as the members of society, and that an integrated environment is needed to help reduce the negative behaviors of the children with disability which interfere with their social adaptation[6]. Furthermore, in order to reduce the problematic behaviors in an integrated environment, there existed a study claiming that problematic behaviors were first mediated and then social skills were mediated, and the effect of the integrated environment was stressed for the education of the children with disability[7]. Behavior of deviation, which is among such problematic behaviors, is considered to be important as it is connected to the safety issues at the facilities during the program operation[8].

The Chase technique, which is widely used for the group therapy, stresses on the prototype and can influence the interactions via the process of empathizing and communicating within the group by applying empathic reflection through mirroring[9]. To date, the effect of movement therapy on the disabled has been known through many studies[10][11]. Notwithstanding which, the studies which have applied the Marian Chase Technique are minimal.

Given the fact that the Marian Chase's technique has been devised and used to improve the interaction and communication of the subjects with a focus on the integrated group therapy, it is determined to be appropriate as a program for forming the peer relationship for the autistic students with disability[12].

The purpose of this study is to validate the effect of the movement therapy program applying the Marian Chase Technique on the peer relationship and behavior of deviation within the integral education for the non-disabled and the disabled of the same age.

## 2. Research Method

### 2.1. Research subject and procedure

In this study, the students without disability participated in the experiment to validate the effectiveness of the integral movement therapy program applying the Marian Chase Technique. The subjects were selected via a preliminary survey, and the movement therapy program was finalized and confirmed. A total of 12 movement therapy programs were carried out once per week from September 4, 2019 until November 27, 2019 for 3 students with disability and 7 students without disability who participated in the after school movement therapy program at M University. All 3 students with disability had autism, and their individual characteristics are as illustrated in <Table 1>.

**Table 1.** Individual characteristics.

Children	Age	Type of disability	Linguistic and social characteristics
----------	-----	--------------------	---------------------------------------

A	16	Class 3 for autism	Expresses opinion in short sentences. Does not make eye contacts well. Likes dynamic physical sports and has good athletic skills. Understands the concept of rules and can wait in a line.
B	15	Class 2 for autism	Cannot speak and expresses emotions via actions or facial expressions. Laughs when he feels good and often deviates the group when he feels bad. Repeats the above stated actions such as jumping on the mat. Does not understand the concept of rules and cannot wait in a line.
C	14	Class 3 for autism	Can speak short words of a single word. Can make eye contacts. Likes to play with balls. Has many dynamic body movements. Understands the concept of rules, but dislikes waiting in a line.

The comparison group of 7 students without disabilities was consisted of the students with disability and their peers, who are children aged 12 to 15.

## 2.2. Technical measure of peer relationship

The technical measure of peer relationship used for this study was the technical measure of peer relationship validated for domestic studies by Yoon-Ran Yang and Kyung-Ja Oh(2005). As for the structure and content validity of the questions, the original author's intentions were preserved to the extent possible. The questions were consisted of 19 questions, and the sub-factors of the measure were classified into the 2 areas of initiative and cooperation and empathy <Table 2>. As for the measurement, the 4 step measurement was used, and was classified into "Strongly agree," "Never," "Often," and "Always," and the peer relationship was measured after the movement therapy program was completed each and every round[13].

**Table 2.** Sub-factors of the measure.

	Details	Questions
Initiative	Initiates interactions with peers, or leads relationship, and responds to pressures or situations of conflict	1, 3, 4, 7, 10, 12, 14, 15, 18
Cooperation and empathy	Helps peers, shares articles, follows rules, expresses interest in the peer's emotions or expresses own emotions	2, 5, 6, 8, 9, 11, 13, 16, 17, 19

## 2.3. Measurement of the behavior of deviation

The behavior of deviation of the subject children was measured by directly observing the frequency manifested during 60 minutes of the movement therapy program. The measurements were taken at the 30 minute intervals by dividing the 60 minute round into 2 rounds. The behavior of deviation was defined as the time during which they deviated from the group and did not participate in the program. In order to obtain the inter-observer reliability, 2 observers, a movement therapist and a graduate student specializing in physical education, obtained the reliability of the behavior of deviation during 3 rounds, which corresponded to 25% or more of the experimental rounds. The inter-observer reliability was calculated by using the formula of the number of coincidence intervals between the 2 observers ÷ [number of coincidence intervals + number of the lack of coincidence intervals] × 100 concerning the record table for the said intervals. The result of calculating the inter-observer reliability after rounding off the decimal points turned out to be 91%.

## 2.4. Movement therapy program

This movement therapy program was designed based on the process of empathizing and communicating by applying the empathic reflection and conducting the group therapy focused on the

circles using the Marian Chase Technique[9]. The program contents were structured by modifying and supplementing the survey-analysis-design-verification stages. This program was consisted of 12 rounds, divided into 3 major themes, and then 4 rounds were conducted with a single theme. The themes were designed from the basic level up to the intensive level. Weeks 1 to 4 were consisted of the stage of recognizing others, Weeks 5 to 8 were consisted of the stage of recognizing small groups, and Weeks 9 to 12 were consisted of the stage of recognizing the entire group. In order to structure the movement therapy program activities appropriate for each stage specific goal, they were revised and selected in line with the emotional and behavioral characteristics of the children who lack the peer relationship. The program of the study was conducted by a movement therapist with over 10 years of clinical experience and an accredited certificate, who can mediate for the peer relationship improvement, and the program details are as illustrated in <Table 3> .

**Table 3.** Program details.

Period	Theme	Focus	Details	Medication
1	Recognition of others (pair)	Week 1-4	Greetings with others via the movement of a circular structure	Initiative
2			Self-introduction to others via movements	
3			Catch ball in a pair of 2 persons	
4			Change place for hula hoop	
5	Recognition of small groups	Week 5-8	Mirroring(induce imitation of each other's actions via leader's intervention)	Empathy
6			Move original place of parachute one at a time	
7			Make tunnel	
8			Give and take gym ball in a circular structure	
9	Recognition of entire group	Week 9-12	Gather closely inside a circle in a circular structure, and call names	Cooperation
10			Change place underneath the parachute's circle	
11			Hold a parachute and dance in a group	
12			Create a snail circle with entire trains	

## 2.5. Data analysis

This study was conducted to validate the effect of the behavioral therapy program on the peer relationship and the behavior of deviation of the students with autism. As for the peer relationship of the students without disability and the students with disability, the scores measured after each round were compared and analyzed by using a test paper. As for the behavior of deviation of the students with disability, the average measured twice for every 30 minutes was recorded, and the average change in the number of frequencies for each round was compared, and analyzed.

## 3. Results

### 3.1. Analytical results on the peer relationship

As a result of performing the peer relationship measurement of the movement therapy program in the integrated environment, student A with disability improved by a total of 32 points from 2 points during the 1st round to 34 points during the 12th round, and B increased by a total of 8 points from 1 point during the 1st round to 9 points during the 12th round. Furthermore, student C with disability improved by a total of 21 points from 11 points during the 1st round to 28 points during the 12th round. The average score for the students disability increased by 13 points from 28.14 points during the 1st round to 41.14 points during the 12th round, yielding a significant improvement from the first time. During the 6th round, the students without disability scored 28.42 points, student A with disability scored 12 points, student B with disability scored 2 points, and the student C with disability scored 10 points, with all of their scores turning out to be lowed. In addition, during the 7th round, the students without disability scored 34.85 points, student A with disability scored 21 points, student B with disability scored 4 points, and the student C with disability scored 14 points, with all of them achieving significant improvements <Table 4>.

**Table 4.** Result of the measurement of peer relationship.

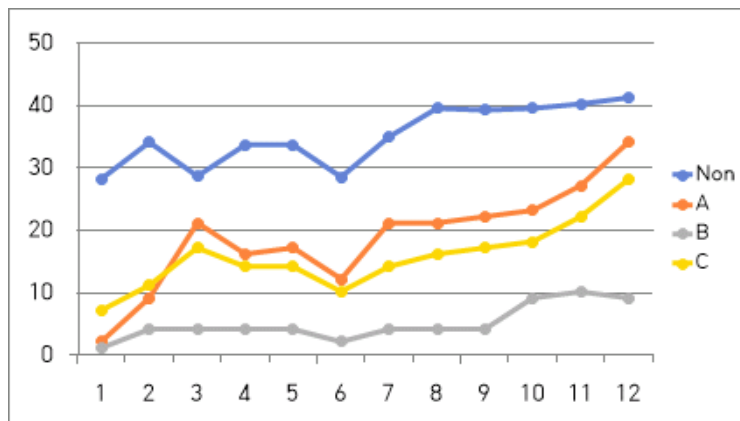
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
Non-disabled	28.14	34	28.57	33.57	33.57	28.42	34.85	39.42	39.14	39.42	40.14	41.14
A	2	9	21	16	17	12	21	21	22	23	27	34
B	1	4	4	4	4	2	4	4	4	9	10	9
C	7	11	17	14	14	10	14	16	17	18	22	28

As a result of comparing the peer relationship of the students without disability and the students with disability by round, the peer relationship improved in the second round where both the students without disability and the students with disability “introduced themselves through movement.” In addition, during the 3rd round of “Giving and taking gym ball in a circular structure,” the peer relationship of the students without disability decreased to 28.57 points, and the peer relationship of the students A and C with disability improved to 21 points and 17 points, respectively.

During the 6th round of “Relocating to a parachute circle,” the students without disability and the students A, B, and C with disability all turned out to have a low peer relationship, and during the 7th round of “Making a tunnel hand in hand,” they all scored high at 37.85 points, 21 points, 4 points, and 14 points, each respectively. As for the non-disabled, there was no change in the peer relationship from the 8th to the 12th round. The peer relationship of the student A with disability incrementally improved to 21 points, 21 points, 22 points, and 23 points, each respectively, from the 7th, 8th, 9th, and 10th rounds, and largely changed to 27 points during the 11th round, which is an intensive stage, and to 34 points during the last 12th round.

The student B's peer relationship did not demonstrate any significant change. The student C's peer relationship demonstrated high scores at 17 points, 17 points, 18 points, 22 points, and 28 points, each respectively, during the 3rd, 9th, 10th, 11th, and 12th rounds. See the <Figure 1>.

**Figure 1.** Comparison of the peer relationship scores.



As a result of measuring the frequency of the behavior of deviation by period via the movement therapy program, the student A with disability decreased by 75% from 4 times during the 1st round to once during the last 12th round on average. The student C with disability decreased by 50% from 6 times during the 1st round to 3 times during the 12th round, while the student B with disability decreased by 25% from 8 times during the 1st round to 6 times during the 12th round <Table 5>.

**Table 5.** Frequency of the behavior of deviation.

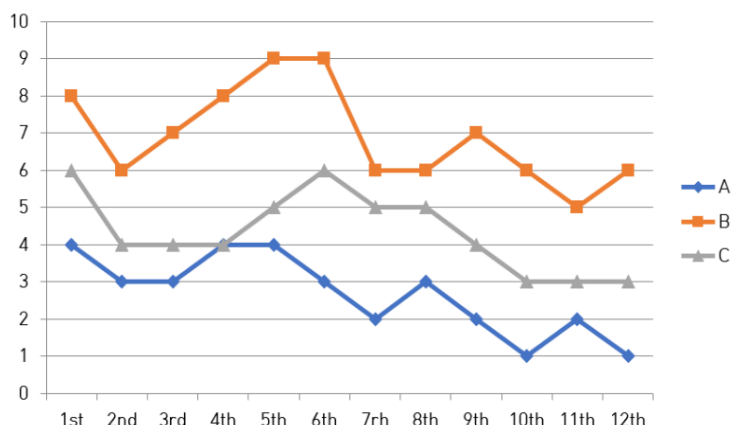
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th
A	4	3	3	4	4	3	2	3	2	1	2	1
B	8	6	7	8	9	9	6	6	7	6	5	6
C	6	4	4	4	5	6	5	5	4	3	3	3

As a result of comparing the frequency of deviation by round for the students with disability, the student A with disability increased the behavior of deviation to 4 times, 3 times, and 2 times, each respectively, during the 4th, 8th, and 11th rounds, then declined. The student A with disability demonstrated many behaviors of deviation in the stage of recognizing others and small groups in the early stage of participation in the program, and demonstrated a significant decrease in the behavior of deviation towards the latter half of the participation.

The student B with disability demonstrated 8 times of behaviors of deviation during the 1st round, yet the frequency decreased to 6 times during the 2nd round. It slightly increased each time during the 3rd and 4th rounds, then the number of frequencies increased to 9 times each during the 5th and 6th rounds, then from the 7th round, the decrease and increase repeated slightly, then no significant change was demonstrated overall.

The student C with disability's behavior of deviation declined from 6 times during the 1st round to 2 times during the 4th round, yet no change was demonstrated until the 4th round. During the 5th and 6th rounds with the theme of small group's perception, the frequency increased slightly to 5 and 6 times, each respectively. Such frequency incrementally decreased after 7th, 8th, 9th, and 10th rounds, and no further change took place thereafter <Figure 2>.

**Figure 2.** Frequency of the behavior of deviation.



## 4. Discussion

In this study, the Marian Chase Technique was used to examine and understand the effect of the movement therapy program on the peer relationship and the behavior of deviation, and the program was designed based on the process of empathizing and communicating by applying empathic reflection and conducting group therapy focused on a circle[9]. As a result of the peer relationship measurement performed through the movement therapy program, the peer relationship improved all for the students A, B, and C with disability and the non-disabled children, and it turned out that the group activities carried out in an integrated environment had a positive effect on both the students with disability and the students without disability[4][6]. Such results yield that the effect of the Marian Chase Technique's group program stressing on the importance of empathy and communication for the students with autism with communication problems turned out to be far greater through the integral education[1][10].

The integral movement therapy program of this study applied the Marian Chase Technique to stress on the empathy and communication, and from Week 1 to 4, it proceeded with the process of recognizing others(pair), from Week 5 to 8, recognizing small groups, and from Week 9 to 12, recognizing the entire group. The peer relationship of the students A and C with disability changed significantly, yet that of the student B with disability did not change significantly. It was evident that in the case of group B, which had a relatively severe level of disability, the problem of communication with peers did not change easily since it did not work a language of expression[2][14].

Meanwhile, the students A and C with disability recorded the best peer relationship scores in the intense level for each theme. In the process of recognizing others, small groups, and entire group, the effect turned out to be greatest in "Making a snail with trains" where direct physical contact with the students without disability took place with the subject, and it may be viewed that it had a positive effect on the students with disability in terms of their integrated relationship with their peers[5].

As a result of comparing the frequency of deviation by round for the students with disability, the behavior of deviation increased during the 4th, 8th, and 11th rounds for the student A with disabilities. The student A with disability demonstrated many behaviors of deviation during the stage of recognizing others and small groups in the early stage of the program participation. It was evident that the children with autism, who demonstrated difficulties in carrying out their relationships with others, had difficulties in recognizing others and small groups, and such problematic behavior seems to have decreased during the final stage of adaptation to the entire group[15][16]. The behavior of deviation demonstrated the lowest frequency during the 10th and 12th rounds. In the last theme of the movement therapy program, relocating to underneath a parachute and making a snail with trains

were the processes of recognizing each other, and it was visible that the problematic behaviors declined by recognizing the group[17].

The student B with disability demonstrated many behaviors of deviation during the 1st round, yet the frequency decreased during the 2nd round. However, as the behavior of deviation gradually increased from the 3rd and 4th rounds, when the self-introduction was completed, and as the theme of recognizing others began full-fledged, the frequency increased further to 9 times during the 5th and 6th rounds, each respectively, where the small group's recognition stage began. More behaviors of deviation took place for the students with autism who had problems with their language of expression[18]. Furthermore, it was evident that the student B with disability, who had difficulty in observing the rules due to severe extent of disability, liked to play with balls, yet failed to wait for his turn and deviated out of anger[14][16].

The student C with disability demonstrated a decrease in the behavior of deviation during the 2nd round, yet did not demonstrate any change until the 4th round, which is the stage of recognizing others. During the 5th and 6th rounds, when the theme of small group recognition began, the frequency of behavior of deviation rather increased, and the frequency of such problematic behaviors gradually decreased through the 7th, 8th, 9th, and 10th rounds. It was evident that the problematic behaviors declined by forming pairs with other counterparts and cooperating with each other through the tunnel actions with the counterparts at the stage of starting to lead empathy and the two person paired ball catch program[17]. The student C with disability, who can make eye contacts, felt bored and deviated when inducing static movements due to a lot of dynamic body movements[19]. The behavior of deviation, which is among the problematic behaviors, ought to be cautioned since it may be connected to the safety issues[8][20][21][22][23][24].

Consequently, it was evident that the effect of the movement therapy program with the integrated education executed has had an effect on the peer relationship and also on the behavior of deviation for the children with mild autism[14]. This study did not make distinctions as to the extent of disability for the children with autism, yet moving forward, it is considered that studies are needed to develop the individualized movement therapy programs for the students with autism who demonstrate large differences in their social nature.

## 5. References

### 5.1. Journal articles

- [1] Lim Y & Park K & Kim H. Autism Spectrum Disorder Diagnosis in Diagnostic and Statistical Manual of Mental Disorders-5 Compared to Diagnostic and Statistical Manual of Mental Disorders-IV. *Korean Journal of Child Adolescent Psychiatry*, 29(4), 178-184 (2018).
- [2] Shin D & Choi S. A Study on the Condition of Assessment Regarding Social Skill Instruction for Elementary Students with Mild Intellectual Disability. *Special Education Research*, 9(2), 93-121 (2010).
- [3] Park K & Lee Y. The Effect of Individual Positive Behavior Support on Problem Behavior Generalization of Autistic High School Students. *Journal of Special Education & Rehabilitation Science*, 56(1), 1-25 (2017).
- [4] Lee S & Yoon J. An Analysis of Domestic Research Trend Relevant to Social Skills of Preschoolers with Disabilities in Inclusive Educational Environments. *Korean Council of Physical, Multiple & Health Disabilities*, 55(3), 21-46 (2012).
- [5] Jung Y & Park M. Qualitative Case Study of the Autistic Child through Inclusive Education Playing Together in the Locality. *The Journal of Korea Open Association for Early Childhood Education*, 11(3), 405-429 (2006).
- [6] Lee J & Jeon S. Effects of Small-group Social Skills Training Program on Social Skills and Peer Play Behavior of Children with Autism Spectrum Disorder in Inclusive Environment. *Journal of Special Education*, 34(2), 43-72 (2018).



- [7] Seo E. The Effects on the Social Skill Training Program for Dealing with Emotion Skills of Children with Special Needs. *Journal of Special Education for Curriculum and Instruction*, 8(3), 21-49 (2015).
- [8] Lee S & Park Y. The Reality of Safety Education in Inclusive Early Childhood Education Settings and Suggestions for Improvement. *The Korean Journal of Early Childhood Special Education*, 11(3), 75-110 (2011).
- [10] Nam H & Cho M. The Effects of Dance/Movement Therapy on Social Characteristics of Children with Developmental Disabilities. *The Journal of Korean Dance Movement Psycho Therapy*, 3(1), 5-25 (2019).
- [11] Bae S. The Effect of Dance Movement Therapy on Social Interactions of Autistic Intellectual Disability. *Journal of Korean Dance Movement Psycho Therapy*, 4(2), 31-56 (2020).
- [12] Lee J & Kim J & Oh A. Action Research on the Dance Movement Therapy for Students with Intellectual Disability -Focusing on Marian Chace-. *Journal of Korean Physical Education Association for Girls and Women*, 29(2), 107-128 (2015).
- [13] Yang Y & Oh K. Development of Peer Relational Skills Scale for 4th-9th Grades. *Korean Journal of Clinical Psychology*, 24(4), 961-971 (2005).
- [14] Hong J & Bang M. Characteristics of the Restricted Repetitive Behaviors in Students with Autism Spectrum Disorder according to Individual Variables. *Journal of Special Education*, 36(2), 169-193 (2020).
- [15] Lee S & Han Y & Lee J. The Effect of Communication Gymnastics Program on Sociality and Peer Relations for Students with Intellectual Disabilities. *Journal of Intellectual Disabilities*, 19(4), 135-150 (2017).
- [16] Kim H & Do M. The Effects of Peer Intervention Role Play on the Social Behavior of Autistic Infants. *Journal of Emotional & Behavioral Disorders*, 28(2), 255-278 (2012).
- [17] Lee H & Han M. The Effects of 12 Weeks Psychomotorik Program on Problem Behaviors of Students with Autism Spectrum Disorders. *Journal of Intellectual Disabilities*, 17(1), 389-410 (2015).
- [18] Seo E & Lee S. The Effects of the Functional Curriculum on Receptive and Expressive Language Skills for a Child with Developmental Delay. *The Korean Society of Special Education*, 38(3), 333-358 (2003).
- [19] Kim M & Chun H. The Effect of the Peer Intervention Play Activities on the Positive Social Actions of Autistic Children. *The Journal of Special Children Education*, 7(1), 47-69 (2005).
- [20] Park S & Kang M. Study on the Safety Accidents in Korean Elementary School Physical Education Classes. *International Journal of Crisis & Safety*, 3(3), 10-14 (2018). [\[Article\]](#)
- [21] Park S & Kim B & Choi B. Improvement Plan for the Safety Management System of the Korean Martial Arts. *International Journal of Crisis & Safety*, 2(3), 28-32 (2017). [\[Article\]](#)
- [22] Choi H & Park C. Relationship between Participant's Selection Attributes, Satisfaction, and Continued Participation according to Safety Awareness of Water Leisure Sports. *International Journal of Crisis & Safety*, 6(2), 1-8 (2021). [\[Article\]](#)
- [23] Lee J & Yoon S. An Analysis on Importance of CPTED Planning Factors to Make Safety Boundary Space at Condominium Complex in Republic of Korea. *International Journal of Crisis & Safety*, 1(2), 35-41 (2016). [\[Article\]](#)
- [24] Bak W & Kim K & Lee Y & Lee H & Park J & Yoon R & Lim K & Kim S & Lim K & Kang J. Is Laughter Therapy Useful in a Health Crisis?: Meta-analysis of Laughter Therapy. *International Journal of Crisis & Safety*, 6(1), 41-50 (2021). [\[Article\]](#)

## 5.2. Books

- [9] Levy FJ. Dance/Movement Therapy: A Healing Art(2<sup>nd</sup> ). Sigma (1988).

## 6. Contribution

### 6.1. Authors contribution

		Initial name	Contribution
Author	SK		-Set of concepts <input checked="" type="checkbox"/>
			-Design <input checked="" type="checkbox"/>
			-Getting results <input checked="" type="checkbox"/>
			-Analysis <input checked="" type="checkbox"/>
			-Make a significant contribution to collection <input checked="" type="checkbox"/>
			-Final approval of the paper <input checked="" type="checkbox"/>
			-Corresponding <input checked="" type="checkbox"/>
			-Play a decisive role in modification <input checked="" type="checkbox"/>
			-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
			-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
			-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/>

Publisher: J-INSTITUTE  
ISSN: 2189-7603

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: gusdk8910@hanmail.net

DOI Address:  
dx.doi.org/10.22471/crisis.2021.6.3.55

© 2021 J-INSTITUTE

## A Study on SAFETY Vegetable Protein Intake from Fat and Cholesterol

Jeongryeol Bae<sup>1</sup>

*Papachocolate, Anyang, Republic of Korea*

Hyunah Kim<sup>2\*</sup>

*Dreamcook, Seoul, Republic of Korea*

### Abstract

**Purpose:** Currently, the number of single person households worldwide is increasing. Lifestyle-related diseases are increasing due to changes in consumption patterns, excessive intake of fat and cholesterol, and increased intake of processed foods. Therefore, modern people have increased their interest in health, and as they are more interested in vegetarian diets and exercise, the purchase and intake of protein useful for health is increasing. Therefore, this study aims to investigate the reasons for purchasing plant protein, expenditure cost, purchase type, etc. for consumers who have purchased plant-based protein, and to provide basic data when developing plant-based protein products.

**Method:** From April 1 to 20, 2021, FGI(Focus Group Interview) was conducted with 12 people in their 20s and 12 people in their 30s. One person's interview took about 2 hours, and after recording, the contents were organized. Questions are the reasons for purchasing vegetable protein supplements, one-time purchase cost, type of vegetable protein supplement, and importance when purchasing vegetable protein supplements.

**Results:** The ratio of men and women in their 20s and 30s was 50%, 12 people in their 20s and 12 people in their 30s. There were 10 students and 14 working people. Reasons to buy vegetable protein supplements include increased muscle mass, lower fat and cholesterol content than animal protein, and diet. The one-time purchase cost was 20,000 to 30,000 won, and the most common purchase of powdered vegetable protein supplements was the development of snacks, noodles, and confectionery. In addition, protein content, fat and cholesterol content, trusted brands, diet and help in increasing muscle mass were also considered important.

**Conclusion:** It is best to develop vegetable protein products that consumers want, such as snacks, noodles, and bakery products addition, onetime cost is 20,000 to 30,000 won, and it is recommended to develop a products that can increase muscle mass and has low fat and low cholesterol content. Therefore, this study is thought to be helpful in the development of plant protein intake products suitable for the tastes of consumers in their 20s and 30s who are dieting and vegetarian.

**[Keywords]** Vegetable Protein, FGI(Focus Group Interview), Purchasing Behavior, Product Development, Consumer Demand

## 1. Introduction

Due to the increase in national income, the increase in single person households, and changes in consumption patterns, modern people consider health very important and interest has increased[1]. In addition, modern people recommend intake of vegetable sterols rather than animal sterols to improve health, and food intake is considered to be very important for proper weight maintenance[2].

The dietary habits of Koreans have rapidly become westernized, and their intake of cholesterol and animal fat has increased. Since 1961, the United States has recommended the intake of vegetable oils and fats as a recommendation to reduce cholesterol intake[3]. Hamburger

patties with vegetable ingredients have a low content of crude fat, sodium, cholesterol, etc., and when the patties are ingested, the serum concentration and blood sugar level are low [4]. Ingestion of a mixture of vegetable foods reduces lipid peroxide levels [5], and pork with vegetable fats has a lower cholesterol content [6]. Among vegetable foods, soy protein, unlike animal protein, reduces the risk of heart disease that does not contain cholesterol and saturated fat [7], soy protein is used for coronary heart disease. It is in the limelight as an alternative to the risk of developing cholesterol and animal proteins [8].

In recent years, interest in vegetarian diets has increased and interest in vegetable proteins rather than animal proteins are increasing. Representative foods of vegetable protein include soybeans, nuts, and grains. Soybeans are rich in protein (40%) and low in starch content, so Koreans use them as a protein-grade food instead of animal protein [9]. The Food and Agriculture Organization of the United Nations (FAO) calls for a 70% increase in food production going forward to feed the growing world population [10]. There is a limit to increasing food production, and carbon dioxide emissions from raising animals are also a problem for the environment, so it is important to produce food materials that are economical and meet consumer needs, such as beans, nuts, and grains [7].

Soybeans are popular all over the world as a health food, but soybean protein is effective in reducing LDL, increasing HDL, anticancer, diabetes treatment and prevention, and is good for the health of middle-aged women [11]. Soybean intake is important for preventing osteoporosis [8][12][13]. Fermented soybeans also lower the blood glucose concentration [14]. Therefore, it is very important to develop a variety of bean cooking methods and increase bean consumption. As a study on soybeans, fat reduction effect [14], etc. has been reported. By measuring PDCAAS (Protein Digestibility Corrected Amino Acid Score) of isolated soy protein, it was reported that the highest number of isolated soy protein was 1.00 or 100%, which is the same as milk (casein) and egg [15]. In addition, there are studies that soy protein is effective for weight loss as it increases satiety and suppresses appetite [16], and body fat significantly decreased after 12 months of ingestion of soy protein [17]. In addition, studies have shown that vegetable protein intake is significantly related to skeletal muscle loss [18]. It is an important source of protein for vegetarians in their 20s and 30s who are on a diet [19]. Related studies on vegetable protein reported so far include animal and vegetable protein intake and socioeconomic level of young Koreans [20], technology development trends and prospects for alternative protein food (vegetable protein meat) [21], and meat like food using vegetable protein [22]. There are few studies on vegetable protein requirements of consumers.

According to a study by Kim JS et al (2016), there is a need for research on this because lifestyle related diseases increase due to an increase in fat intake due to a westernized diet, but there are few studies on plant food intake and vegetable protein intake [23]. Therefore, in this study, the consumer demand for vegetable protein is investigated and the results are derived to suggest the development direction of vegetable protein products suitable for consumers' preferences and to provide basic data.

## 2. Methods

### 2.1. FGI composition of questionnaire & test

The consumer FGI (Focus Group Interview) survey questionnaire for vegetable protein demand survey was developed based on literature review on vegetable protein purchase cost, purchase reason, factors considered important when purchasing, and purchase formulation.

The questionnaire is structured as follows. Age, gender, occupation 3 questions, purchase reason 6 questions, cost of one time expenditure 6 questions, type of vegetable protein to purchase 4 questions, degree of importance to purchase 18 questions, type of preference when developing vegetable protein products was 7 items.

Based on the results of the simulation test, deficiencies were corrected and supplemented,

a specific action plan for the FGI was established, and a preliminary notice was sent to the selected panel about the progress schedule, research progress, and questions.

The vegetable protein consumer demand survey was conducted with 12 people in their 20s and 12 people in their 30s. And the interview survey period was April 1-20, 2021 (Total interview time per person is about 2 hours). The reason why vegetable protein is considered important when purchasing vegetable protein was composed of a questionnaire with 5 points for most important and 1 point for least important.

## 2.2. Data analysis

Statistical processing of this study was done using SPSS Statistics (ver. 22.0, IBM Corp., Armonk, NY and Mplus 8.0). All items were subjected to frequency analysis.

## 3. Results & Discussion

### 3.1. Qualitative research results(FGI)

For 18 questions, including how much you buy, why you buy, what's important when you buy, and what formulations to buy, see Follows.

#### Reasons to buy vegetable protein foods

Respondents included 'Increase in muscle mass', 'Less cholesterol than animal protein', 'Diet', and 'Help with health' in their opinions on why they purchased plant-based protein foods.

**"When I eat animal protein when I exercise, so I get skin trouble and I eat plant-based protein."**

**"Animal proteins are high in cholesterol."**

**"Wouldn't it help with dieting by all will?"**

#### Purchase cost

The distribution of respondents to the cost of a single purchase was widely shown, and differed from product to product.

**"A protein shake can last a long time once you buy it, so you pay \$50."**

**"I think plant-based protein foods cost roughly 2-30,000 won."**

**"It depends on the type, but vegetable bread costs 40,000 won at a time."**

#### Vegetable protein form to buy

Most respondents said that there are limited types of vegetable proteins currently available on the market, so there is a narrow choice.

**"I want different forms to develop. I know there's only a powder form."**

**"Liquid? Powder? Isn't that all that?"**

#### Most important to you when buying

Respondents answered the question in the most detail among the various questions.

**"Protein food is important, it has to be delicious, and without cholesterol and fat, I think it would be great."**

**"I don't think I'll eat any health food without taste, and I think it's better to eat it instead of animal foods, so I think it's better to have low cholesterol."**

**"I think it's a healthy goal, so of course it should be high in protein content, and if it contains additional ingredients like omega-3s and probiotics, I think it's going to be bought unconditionally."**

After supplementing the main contents derived through FGI was completed in the questionnaire question.

### 3.2. General information

The demographic characteristics of the vegetable protein intake requirement survey were

12persons(50%) in their 20s and 12persons(50%) in their 30s. There were 12 males and 12 females each, 10 students(41.66%), and 14 office workers(58.33%).

**Table 1.** General information.

Age	20 age : 12 persons(50%)	30 age : 12persons(50%)
Gender	Males: 12 persons(50%)	Females: 12 persons(50%)
Occupation	Students: 10persons(41.66%)	Office workers: 14persons(58.33%)

### 3.3. Reasons to buy vegetable protein foods

The reasons for buying vegetable protein are lower fat content than animal protein, most in 6 people(25%), followed by increased muscle mass and cholesterol content than animal protein. There were few, and it was 5 people(20.83%). Three people(12.5%) had a healthy diet, and two people(8.33%) had a social aspect(vegan or animal cruelty prevention). Currently, consumers are becoming more interested in vegetarian and vegetable protein due to health concerns, but after investigating the reasons for purchasing vegetable protein foods among consumers who purchased vegetable protein, animal origin It was found that vegetable protein is more expensive to buy because it contains less fat and cholesterol than protein, and consumers are more interested in vegetarian and vegetable protein. Consumers' interest in the environment and health is growing, animal alternative protein foods are emerging worldwide[21], socio-economic levels are rising, health awareness is rising and vegetable Increased protein intake[24]. This study also reported the same results as purchasing vegetable protein for the fat and cholesterol content of animal protein.

**Table 2.** Reasons to buy vegetable protein foods.

Item	People(%)
Help with health	3(12.5%)
Diet	3(12.5 %)
Increase in muscle mass	5(20.83%)
Social aspects(prevention of vegan or animal cruelty)	2(8.33%)
Less fat than animal protein	6(25%)
Less cholesterol than animal protein	5(20.83%)

### 3.4. Onetime purchase cost

As for the cost of one purchase of vegetable protein, 2 people(8.3%) had the highest purchase cost of less than 10,000 won, 3 people(12.5%) bought more than 10,000 won and less than 20,000 won, and 10 people(41.7%) had more than 20,000 won and less than 30000 won. 6 people(25%) had more than 30,000 won and less than 40,000 won, and 3 people(12.5%) paid more than 40,000 won for one purchase of vegetable protein, and it was found that the cost of one purchase of vegetable protein was 20,000-30,000 won.

**Table 3.** One time purchase cost.

Item	People(%)
10,000 won less than	2(8.3%)
10,000-20,000 won less than	3(12.5%)
20,000-30,000 won less than	10(41.7%)
30,000-40,000 won less than	6(25%)
40,000 won more than	3(12.5%)

### 3.5. Which vegetable protein form to buy

The purchased formulation of vegetable protein appears in 9 people(37.5%) for powder type, 8 people(33.3%) for liquid type, 6 people(25%) for solid type, and 1 person(4.2%) for energy bar type. Currently, the most popular products on the market are the powder type and liquid type. It is believed that the subjects of survey also responded that they purchased the powder type the most since the vegetable protein products sold in the market were the most for the powder type, and it is also believed that they responded that the purchases of the liquid form type increased following the increase in the purchases of the products sold in the market given the large popularity of "soymilk" recently. The solid type was primarily such products as tofu and fried tofu, which were surveyed during the interviews.

**Table 4.** Vegetable protein form to buy.

Item	People(%)
Powder type	9(37.5%)
Liquid type	8(33.3%)
Solid type	6(25%)
Energy bar type	1(4.2%)

### 3.6. What is most important to you when buying

As a result of investigating the degree of importance when purchasing vegetable protein, protein content was the highest, followed by fat and cholesterol content and help with dieting. A reliable brand, helps increase muscle mass, and raw material content were significantly higher. The simplicity of intake, simplicity of intake, and convenience of carrying were high, the taste was the lowest, and it was found that taste was less important when consumers purchased vegetable protein. There were many opinions that the fat content was lower than that of animal protein because of the reason for purchasing vegetable protein, but the fat and cholesterol content was the highest even if it was important at the time of purchase, and the purchase of vegetable protein was animal protein. We learned that consumers perceive that they have lower fat and cholesterol content than protein. Among the representative foods of vegetable protein such as soybean and nut grain, soybean protein is as effective as animal protein in appetite regulation and weight loss, and reduces LDL cholesterol and neutral fat. It is the only complete protein food among vegetable proteins. In addition, soy protein is easy to predict price and supply, easy to control costs, can improve product profitability, and can be used as an economical alternative compared to animal protein[9]. During the interviews, the panel thought that the vegetable protein is more beneficial for health than the animal protein from daily life and habit related diseases and obesity, and they also wanted various products developed of vegetable protein since the vegetable protein can be ingested even when intermittent vegetarians practice their diet as in trend today. The currently marketed products are diversifying not only across



tofu, dried tofu, soybean milk, and tofu snacks, but also tofu noodles, soymilk, tofu gratin, and soybean milk ice cream, etc., which have been sold for long. However, they do not satisfy the consumers in terms of their product selection. Therefore, it is believed that the development of products using other vegetable protein as well as soybeans need to be further diversified.

**Table 5.** Most important to you when buying.

Item	Means±S.D.
Protein content	4.54±0.72
Nutrient indication	3.95±0.69
Taste	3.25±0.67
Raw material content	4.25±0.89
Using organic food ingredients	3.83±.96
Contains functions other than main ingredients(Omega-3, probiotics etc.)	3.95±0.80
The proper amount of a single dose	3.87±0.61
Number of daily intake	3.83±0.63
Formulation of protein health supplements(powder, liquid, tablets etc.)	3.75±0.67
Fat and cholesterol content	4.41±0.67
Food additives no additives	4.00±0.78
Hygienic manufacturing	4.20±0.50
Simplicity of intake	4.12±0.44
Convenience of carrying	4.08±0.50
Country of manufacture verification	4.12±0.67
A reliable brand	4.37±0.64
Help with dieting	4.41±0.82
Helps increase muscle mass	4.29±0.85

## 4. Conclusion

The following is a summary of the results of the FGI survey, which looks at the spending, reasons for purchasing, types, and reasons for emphasizing when purchasing vegetable protein for consumers.

The reason for purchasing vegetable protein is that it contains less fat than animal protein and has less cholesterol than animal protein, so it increases muscle mass and is helpful for health and diet. The most common form of purchase was powder type, which is thought to be due to the fact that most products on the market are powder type. Protein content was the most important factor when purchasing vegetable protein, followed by Fat and cholesterol content and Help with dieting. Also, A reliable brand, Helps increase muscle mass, Raw material content, simplicity of intake, Simplicity of intake, Convenience of carrying were considered important, and taste was not considered important. Among vegetable proteins, soy protein is effective for weight loss and reduces LDL cholesterol and triglycerides. Also, it is the only complete protein food among vegetable proteins, so it can be used as an economical alternative to animal protein[7]. As a result of the investigation, it was found that

the development of vegetable protein products of snacks, noodles, and bakery products was necessary, and the need for the development of vegetable protein powder was the lowest. Currently, soy protein is used in various ways as a substitute or complement to animal protein[9], but development into a product is insufficient. Therefore, it is necessary to develop products that increase the protein content of snacks, cereals, beverages, pasta, and convenience foods suitable for consumers' preferences. Therefore, it was investigated that the vegetable protein products that consumers want are snacks, noodles, and bakery products with high protein content, low fat and cholesterol content, and a price of 20,000 won to 30,000 won. Based on this, it is thought that product development is possible. The higher the education level, the higher the knowledge level on nutrition and health[25]. It is said that the income level increases accessibility to food selection, so that it is possible to choose food that contains sufficient nutrients without being constrained by price[26]. And follow up studies according to age and gender should be conducted.

## 5. References

### 5.1. Journal articles

- [1] We HJ & Lee JB & Kim EJ. Exploring the Experience of Job Convergence Change in the Beauty and Health Industry Using Grounded Theory. *Protection Convergence*, 5(2), 84-93 (2020). [\[Article\]](#)
- [2] Cho CM. A Study on Phytosterols or Phytostanols Consumption and the Protection from Cardiovascular Disease. *International Journal of Protection, Security & Investigation*, 5(1), 22-31 (2020). [\[Article\]](#)
- [3] Jing YS. Solving Misunderstandings about Cholesterol and Animal Saturated Fats. *Korean Society for Food Science of Animal Resources*, 5(2), 9-17 (2016).
- [4] Kim HH & Lim HS. Effects of Sea Tangle-added Patty on Postprandial Serum Lipid Profiles and Glucose in Borderline Hypercholesterolemic Adults. *Journal of the Korean Society of Food Science and Nutrition*, 43(4), 522-529 (2014).
- [5] Kwak CS & Kim MY & Lee MS. Antioxidative Effect of Plant Food Mixtures in R at Fed on High Fat-High Cholesterol Diet. *The Korean Journal of Nutrition*, 38(5), 352-363 (2005).
- [6] Park KS & Choi YJ & Moon YH & Park HS & Jung IC. Physicochemical Characteristics of Ground Pork with Safflower Seed Powder as an Animal Fat Replacer. *Journal of Life Science*, 22(7), 928-935 (2012).
- [7] Kim YA. Soy Protein: A High-quality, Plant-based Protein. *Food Science and Industry*, 51(4), 270-277 (2018).
- [8] Anderson JW & Bush HM. Soy Protein Effects on Serum Lipoproteins: A Quality Assessment and Meta-analysis of Randomized, Controlled Studies. *Journal of the American College of Nutrition*, 30(2), 79-91 (2011).
- [9] Han JS & Kim JA & Suh BS & Lee YJ & Suh HS & Cho YS & Han GP & Lee SJ & Oh OK & Woo KJ & Cho EJ & Koo SJ & Kim SJ & Lee SE & Minamide T. Study on Development of Menus for Daily Intake of 25g Soybean Protein and Nutrition Analysis of Soybean Food. *Journal of the East Asian Society of Dietary Life*, 12(2), 107-112 (2002).
- [11] Yeo IG & Lee JB & Kim JP. Effect of Fun of Elderly Women Participating in Health Qigong on Resilience. *Kinesiology*, 6(1), 30-38 (2021). [\[Article\]](#)
- [12] Benkhedda K & Boudrault C & Sinclair S & Marles R & Xiao C & Underhill L. Food Risk Analysis Communication -Health Canada's Proposal to Accept a Health Claim about Soy Products and Cholesterol Lowering-. *International Food Risk Analysis Journal*, 4, 1-12 (2014).
- [13] Tokede OA & Onabanjo TA & Yansane A & Gaziano JM & Djoussé L. Soya Products and Serum Lipids: A Meta-analysis of Randomised Controlled Trials. *British Journal of Nutrition*, 114(6), 831-843 (2015).
- [14] Lee GH & Kim KJ. Effects of Resistance Exercise and Fermented Soybean Ingestion on the Appearance of Inflammatory Cytokine, Metabolic Risk Factors, and the Body Composition in Obesity-induced White Rats. *International Journal of Crisis & Safety*, 5(2), 55-65 (2020). [\[Article\]](#)

- [15] Hughes GJ & David J & Ryan DJ & Mukherjea R & Schasteen CS. Protein Digestibility-corrected Amino Acid Scores(PDCAAS) for Soy Protein Isolates and Concentrate: Criteria for Evaluation. *Journal of Agricultural and Food Chemistry*, 59(23), 12707-12712 (2011).
- [17] Speaker KJ & Sayer RD & Peters JC & Foley HN & Pan Z & Wyatt HR & Flock MR & Mukherjea R & Hill JO. Effects of Consuming a High-protein Diet with or without Soy Protein during Weight Loss and Maintenance: A Non-inferiority, Randomized Clinical Efficacy Trial. *Obesity Science & Practice*, 4(4), 357-366 (2018).
- [18] Chan R & Leung J & Woo J & Kwok T. Associations of Dietary Protein Intake on Subsequent Decline in Muscle Mass and Physical Functions over Four Years in Ambulant Older Chinese People. *The Journal of Nutrition Health & Aging*, 18(2), 171-177 (2014).
- [19] Won J & Ho KR. Association of Low Hand Grip Strength with Protein Intake in Korean Female Elderly: Based on the Seventh Korea National Health and Nutrition Examination Survey. *The Korean Nutrition Society Community*, 25(3), 226-235 (2020).
- [20] Park HA. Animal and Plant Protein Intake and Socioeconomic Status in Young and Middle-aged Korean Adults. *Korean Journal of Health Promotion*, 20(2), 70-78 (2020).
- [21] Park JW. Alternative Protein Food(Vegetable Protein Meat) Technology Development Trend and Prospect. *Soybean Industry Information Magazine*, 3(0), 22-28 (2020).
- [22] You GY & Yong HI & Yu MH & Jeon KH. Development of Meat Analogues Using Vegetable Protein: A Review. *Journal of the Korean Society for Food Science*, 52(2), 167- 171 (2020).
- [23] Kim JS & Lim KW & Hwang YY. Research Trend of Sport Nutrition Science in the Republic of Korea. *International Journal of Sport*, 1(1), 1-7 (2016). [\[Article\]](#)
- [24] Darmon N & Drewnowski A. Does Social Class Predict Diet Quality. *The American Journal of Clinical Nutrition*, 87(5), 1107-1117 (2008).
- [25] Galobardes B & Morabia A & Bernstein MS. Diet and Socioeconomic Position: Does the Use of Different Indicators Matter. *International Journal of Epidemiology*, 30(2), 334-340 (2001).
- [26] Darmon N & Drewnowski A. Contribution of Food Prices and Diet Cost to Socioeconomic Disparities in Diet Quality and Health: A Systematic Review and Analysis. *Nutrition Reviews*, 73(10), 643-660 (2015).

## 5.2. Books

- [16] Cope MB & Mukherjea R & Krul E & Allison DB. Soy's Potential Role in Weight Management. Nova Science (2012).

## 5.3. Additional references

- [10] <http://www.fao.org/> (2018).

# 6. Appendix

## 6.1. Authors contribution

	Initial name	Contribution
Lead Author	JB	<ul style="list-style-type: none"> <li>-Set of concepts <input checked="" type="checkbox"/></li> <li>-Design <input checked="" type="checkbox"/></li> <li>-Getting results <input checked="" type="checkbox"/></li> <li>-Analysis <input checked="" type="checkbox"/></li> <li>-Make a significant contribution to collection <input checked="" type="checkbox"/></li> <li>-Final approval of the paper <input checked="" type="checkbox"/></li> <li>-Corresponding <input checked="" type="checkbox"/></li> <li>-Play a decisive role in modification <input checked="" type="checkbox"/></li> </ul>
Corresponding Author*	HK	<ul style="list-style-type: none"> <li>-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/></li> <li>-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/></li> <li>-Someone who can explain all aspects of the paper <input checked="" type="checkbox"/></li> </ul>

Publisher: J-INSTITUTE  
ISSN: 2189-7603

Website: j-institute.org  
Editor: admin@j-institute.org

Corresponding author\*  
E-mail: yjsa@kmu.ac.kr

DOI Address:  
dx.doi.org/10.22471/crisis.2021.6.3.64

© 2021 J-INSTITUTE

## Probing the Relationship between Satisfaction with FLEXIBLE-WORK Arrangement and Performance: With a Focus on the Moderating Effect of Organizational Commitment

Yongjin Sa

Keimyung University, Daegu, Republic of Korea

### Abstract

**Purpose:** There are two primary purposes of this study. The first of which is to examine and validate the relationship between the satisfaction with flexible work arrangement and(individual) performance in the public sector. The second of which is to quantitatively validate the moderating effect of organizational commitment on the relationship between the satisfaction with flexible work arrangement and performance. Recognizing that studies in Korea on the flexible work arrangement, especially most of the quantitative studies have been focused on the studies to validate the effect of the flexible work arrangement, and given the inadequacy of the studies statistically validating the relationship with the satisfaction with flexible work arrangement, the goal lies with contributing to the development of the flexible work arrangement related studies.

**Method:** To validate the hypothesis of this study, the data of the 2020 Public Service Life Survey provided by the Korea Institute of Public Administration was utilized. The target of this study was civil servants serving at general(administrative/technical/managerial) duties affiliated with central administrative agencies and self governing governments. Variables for this study include performance(dependent variable), satisfaction with flexible work arrangement(independent variable), organizational commitment(control variable), gender, age, marital status, educational background, and position(control variable), etc. To validate the hypothesis, a statistical analysis was performed to validate the moderating effect by using the regression analysis.

**Results:** The key contents of the results of the statistical analysis of this study are as follows. First, the more the civil servant perceived greater satisfaction with the flexible work arrangement, the higher the individual's perceived performance level. Second, it was confirmed that the organizational commitment variable has had the effect of partially adjusting the positive relationship between the satisfaction with flexible work arrangement and performance. In conclusion, both the first and second hypotheses used in this study were statistically verified. In connection with the control variables, the perceived(individual) performance of the older civil servant also turned out to be higher, and it was analyzed that the perceived performance of the unmarried civil servants was higher than that of the married. Furthermore, it turned out that there is a positive relationship of influence between the level of education and performance.

**Conclusion:** This study, which presented a positive relationship of influence through the quantitative analysis between the satisfaction with flexible work arrangement and performance, is determined to be capable of making contribution to the development of domestic flexible work arrangement related studies to date. Furthermore, in order to further expand the positive relationship between the satisfaction with flexible work arrangement and performance, it was confirmed through the validation of the hypothesis of this study that the extent of organizational commitment of the members is crucial.

**[Keywords]** Flexible-Work Arrangement, Satisfaction with Flexible-Work Arrangement, Performance, Organizational Commitment, Public Sector

## 1. Introduction

The flexible work arrangement has the goal of providing support for the work and family balance through the improvement of organizational productivity performance and job satisfaction of the workers by using various forms of commuting time, employment, and place of work in line with the characteristics of individuals and jobs, thereby breaking away from a uniform form of working. The civil servants' flexible work arrangement in Korea has been fully implemented by the central government and self governing bodies since August 2010. All guidelines including the scope, types, and procedures of the flexible work arrangement are specified by the Minister of Personnel Management. The flexibility of the flexible work arrangement includes concepts such as 1)flexibility in terms of work schedule, 2)flexibility in terms of workload(form of working), and 3)flexibility in terms of work place. According to such concept of flexibility, 7 types of flexible work arrangements are currently in use in Korea[1][2].

First, depending on the form of work, it may be classified into part-time work and full-time work, where the former is a system in which one works less than 40 hours a week. Second, depending on the working hours, it is further classified into timed commuting system, working time selection system, intensive working system, and discretionary working system. The timed commuting system is one where one observes an 8-hour work day, yet allows one to freely choose the start time from 07:00 to 10:00 and the finish time from 16:00 to 19:00. The working time selection system is one which allows one to freely adjust daily working hours within the scope of maintaining a 40-hour, 5-day work week regardless of observance of the 8-hour work day. The intensive working system is one which allows one to voluntarily adjust daily working hours while maintaining 40 hours a week, similar to the working time selection system. However, the difference from the working time selection system is that the intensive working system allows one to work more than 8 hours a day and less than 5 days a week. Lastly, the discretionary work system is mainly aimed at the workers performing the tasks which require highly specialized knowledge and skills, and rather than observing the actual working hours of the workers, it is recognized as working hours upon the completion of project performance based on a separate contract between the organization and the worker. Third, depending on the place of work, there is the telecommuting system where work is performed at home rather than at the office, and the smart working system where work is primarily performed at a designated place near the place of residence.

There are two primary purposes of this study. The first of which is to examine and validate the relationship between the satisfaction with flexible work arrangement and(individual) performance in the public sector. The second of which is to quantitatively validate the moderating effect of organizational commitment on the relationship between the satisfaction with flexible work arrangement and performance. Recognizing that studies in Korea on the flexible work arrangement, especially most of the quantitative studies have been focused on the studies to validate the effect of the flexible work arrangement, and given the inadequacy of the studies statistically validating the relationship with the satisfaction with flexible work arrangement, the goal lies with contributing to the development of the flexible work arrangement related studies.

## 2. Theoretical Background and Hypotheses of the Study

### 2.1. Relationship between the satisfaction with flexible-work arrangement, performance and the organizational commitment

Since the utilization of the flexible work arrangement across public institutions, including governmental organizations, and private organizations has increased, the qualitative and quantitative studies on the flexible work arrangement have consistently been conducted.

Among which, a paper which summarized the main research contents and analysis results of the papers covering the flexible work arrangement in the domestic public sector has recently been published[3]. The domestic flexible work arrangement related studies is classified and explained by categorizing it largely into 3 major types. First, these are the papers which analyzed the effects of the flexible work arrangement[4][5][6][7][8]. Second, there are the studies which analyzed the factors which influence the choice of the flexible work arrangement[2][9][10][11][12]. Third, there are the studies which analyzed the status of flexible work arrangement and derived improvement measures[13][14][15][16]. The key value of the paper is that it does not simply categorize the domestic flexible work arrangement related studies, yet it specifically presents the subject of the flexible work arrangement related studies which require future research. The main purpose of this study lie with statistically validating the relationship between the satisfaction with flexible work arrangement, performance, and the organizational commitment, which is among the topics presented as a follow-up study on the flexible work arrangement in Korea.

Examining the trends of the flexible work arrangement related studies in Korea to date, the analysis of the factors influencing the satisfaction with flexible work arrangement or the analysis on the effect of satisfaction with flexible work arrangement on various organizational outcome variables has almost rarely been performed. While there are various theoretical definitions of satisfaction, if satisfaction is defined by using the concept of choice and trust, it may be explained to the extent of consistency between the selected alternative and the trust that one had for the alternative before the selection is made[17]. Comparing which to the use of the flexible work arrangement, it may be described as the extent of consistency between the trust or expectation which the worker had before using the flexible work arrangement and the level of trust or expectation perceived by the worker after using the flexible work arrangement. Hence, it is necessary to study the flexible work arrangement which sets the satisfaction with flexible work arrangement as an independent or dependent variable rather than whether flexible work arrangement is used itself.

The studies on performance, which is a dependent variable of this study, have actively been conducted to date[18][19]. The studies which quantitatively analyzed the relationship between the use of flexible work arrangement and the performance of workers generally present the results of the statistical analysis of the positive relationship of influence. Based on the Social Exchange Theory, it is theoretically based on the relationship of interaction(exchange) between the workers and employers or workers and organizations. However, no quantitative study has been conducted on how the difference in the satisfaction with flexible work arrangement perceived by workers influences the performance. Hence, in this study, it is sought to perform the primary purpose of statistically validating the relationship between the satisfaction with flexible work arrangement and performance.

The variable to validate as the control variable in this study is the organizational commitment. Organizational commitment may be defined as the extent to which members of an organization are immersed in the organization with which they are affiliated, loyalty, and willingness to make personal sacrifices to achieve the organization's goals[20]. The studies analyzing the factors influencing the organizational commitment in the public sector or those analyzing the effect of organizational commitment have continuously been conducted. In general, it may be viewed that there are many papers which presented positive analytical results between the organizational commitment and performance. Even if there exists a positive or negative direct relationship between the satisfaction with flexible work arrangement and performance, it is determined that the extent of impact of the satisfaction with flexible work arrangement on the performance may vary depending on the difference in terms of the extent of organizational commitment of the workers. Based on the discussions above, this study seeks to analyze the moderating effect of the workers' organizational commitment on the relationship between the satisfaction with flexible work arrangement and the performance.



There are two primary purposes of this study. The first of which is to examine and validate the relationship between the satisfaction with flexible work arrangement and performance. The second of which is to validate the moderating effect of organizational commitment on the relationship between the satisfaction with flexible work arrangement and performance. In conclusion, it is to contribute to the flexible work arrangement related quantitative studies in Korea by validating the following hypotheses.

H1: The satisfaction with flexible work arrangement will have a significantly positive effect on the performance.

H2: Organizational commitment will have a significantly moderating effect on the relationship between the satisfaction with flexible work arrangement and performance.

### 3. Method and Results

#### 3.1. Data and variables

To validate the hypothesis of the study, the data from the 2020 Public Service Life Survey was used<sup>1</sup>. These data are provided for the purposes of public research by conducting annual surveys by the Korea Institute of Public Administration. The subjects of the survey are the civil servants having general(administrative/technical/managerial/operational) duties affiliated with the central government agencies and self governing bodies. The key contents of the survey are the personnel and organizational management issues of the governmental organizations.

In this study, variables were measured by using the following questions. First, the dependent variable, (individual)performance, is a question of "I am achieving the performance required by the organization, other organizations, and the stakeholders related to my duties," and the independent variable, the satisfaction with flexible work arrangement, is the "satisfaction with the experience of using the flexible work arrangement," and organizational commitment, the adjustment variable, was "I am willing to work hard for the organization's success." All questions were measured on a 5-point Likert-type scale. Furthermore, the measurement details of the control variables are as follows - gender(1 for male; 2 for female), age(1 in the 20s; 2 in the 30s; 3 in the 40s; 4 in the 50s), marital status(1 for married; 2 for unmarried), educational background(1 graduated high school or below; 2 graduated from community college; 3 graduated from 4 year college or university; 4 graduated from graduate school with a master's; 5 graduated from graduate school with a PhD; and rank(1 for Class 1; 2 for Class 2; 3 for Class 3; 4 for Class 4; 5 for Class 5; 6 for Class 6; 7 for Class 7; 8 for Class 8; 9 for Class 9).

#### 3.2. Validation of the hypotheses

The results of the basic statistical analysis of the variables described in the above are confirmed as in <Table 2> below. The total sample size of the Public Service Life Survey conducted by the Korea Institute of Public Administration was 4,339 people. However, the number of the civil servants who responded to the independent variable, the satisfaction with flexible work arrangement, in this study was 3,146 people. Hence, the sample size for the statistical analysis for the validation of hypothesis in this study is 3,146 people. The results of the correlation analysis performed between the variables are confirmed as in <Table 3> below. It was confirmed that there was a correlation of .177 for the satisfaction with flexible work arrangement and performance, .354 for the organizational commitment and performance, and .177 for the organizational commitment and satisfaction with the flexible work arrangement.

---

<sup>1</sup> This study makes use of the research materials produced by the Korea Institute of Public Administration(KIPA), and has been authorized for use according to the KIPA's regulations on the ownership and use of the said research materials.

**Table 2.** Descriptive statistics.

Variable	N	M	SD
Performance	4339	3.676	.705
Satisfaction with flexible-work arrangement	3146	3.825	.908
Organizational commitment	4339	3.580	.800
Sex	4339	1.433	.496
Age	4339	2.786	.894
Marital status	4339	1.307	.461
Education level	4339	3.060	.669
Grade	4339	6.257	1.178

**Table 3.** Correlations.

Variable	1	2	3	4	5	6	7	8
1. Performance								
2. Satisfaction with flexible-work arrangement	.177							
3. Organizational commitment	.354	.177						
4. Sex	-.047	-.015	-.097					
5. Age	.172	.017	.228	-.165				
6. Marital status	-.137	-.033	-.135	.188	-.505			
7. Education level	.082	.002	.056	-.047	.110	-.082		
8. Grade	-.126	-.019	-.124	.169	-.503	.347	-.292	

The first hypothesis of this study is to examine and validate the positive relationship of effect of the satisfaction with flexible work arrangement on performance. As illustrated in <Table 4>, it was confirmed that the satisfaction with flexible work arrangement and performance had a positive and statistically significant relationship ( $\beta=.132$ ,  $p=.000$ ). Hence, the first hypothesis of this study was adopted. Among the relationship between the control variable and the dependent variable, if only the statistically significant results were to be presented, the older the civil servants, the better the (individual) performance, and it turned out that the performance perceived by the unmarried civil servants was better than that of the married according to the analysis. Furthermore, it turned out that there is a positive relationship of influence between the level of education and the performance.

**Table 4.** Results of regression on the effect of satisfaction with flexible-work arrangement on performance.

Performance (Dependent variable)	Coefficient	Standard errors	t-value	p
Satisfaction with flexible-work arrangement	.132	.013	9.97	.000***
Sex	-.010	.025	-.41	.680
Age	.094	.017	5.50	.000***
Marital status	-.085	.031	-2.77	.006**
Education level	.059	.019	3.12	.002**
Grade	-.015	.013	-1.20	.230
Constant	2.972	.154	19.35	.000***

$R^2=.067$ ,  $F=37.53$ ,  $p=.000$

Note: \* $p<.05$ , \*\* $p<.01$ , \*\*\* $p<.001$ .

<Table 5> presents the results of validating the moderating effect of the organizational commitment on the relationship between the satisfaction with flexible work arrangement and performance, which is the second hypothesis of this study. In order to be validated as a statistically significant moderating effect, the following 3 conditions ought to be satisfied[21][22]. First, Model 1(independent variable, dependent variable), Model 2(independent variable, moderator variable, dependent variable), and Model 3(independent variable, moderator variable, independent variable \* moderator variable, dependent variable) all must be statistically significant as for the quantity of change for the significance probability F. Second, the size of  $R^2$  in Model 1, Model 2, and Model 3 must increase sequentially. Third, the regression coefficient of the interaction term between the independent variable and the control variable must be statistically significant. To validate the moderating effect, in this study, the independent variable satisfaction with flexible work arrangement, the moderating variable organizational commitment, and the interaction term between the independent variable and the moderating variable(satisfaction with the flexible work arrangement\*organizational commitment) were sequentially included for the analysis model, and the regression analysis was performed for each Model. The results of the validation of the regulatory effect of the organizational commitment are as follows. First, the amount of change in the significance probability of Model 1, Model 2,

and Model 3 all turned out to be statistically significant. Furthermore, while the size of  $R^2$  for each model is at a minimal level, it turned out that it is increasing sequentially (Model 1 = .067; Model 2 = .154; Model 3 = .155). However, as a result of the regression analysis of Model 3 performed, it was confirmed that the regression coefficient of the interaction term (satisfaction with the flexible work arrangement\*organizational commitment) was not statistically significant. Considering the above results comprehensively, a conclusion may be reached such that the organizational commitment variable has a partial moderating effect on the relationship between the satisfaction with flexible work arrangement and the performance.

**Table 5.** Results of regression on the moderating effect of organizational commitment on performance.

	Performance (dependent variable)	F	R <sup>2</sup>	p
Model 1	Satisfaction with flexible-work arrangement	37.53	.067	.000
Model 2	Satisfaction with flexible-work arrangement organizational commitment	81.51	.154	.000
Model 3	Satisfaction with flexible-work arrangement organizational commitment Satisfaction with flexible-work arrangement*organizational commitment	71.69	.155	.000

## 4. Discussion

This study has statistically examined and validated the effect of the civil servants' satisfaction with the flexible work arrangement on the performance. Along with which, the moderating effect of the organizational commitment in the relationship between the satisfaction with flexible work arrangement and performance was validated. The key details of the result of the statistical analysis of this study are as follows. First, the more the civil servants perceived greater satisfaction with the flexible work arrangement, the better the individual's perceived performance level. Second, it was confirmed that the organizational commitment variable has the effect of partially mediating the positive relationship between the satisfaction with flexible work arrangement and performance. In conclusion, both the first and second hypotheses used in this study were statistically validated. The flexible work arrangement related studies in Korea to date have analyzed the effect of whether the flexible work arrangement is used on the individual and organizational performance, and many studies have validated the positive effect based on the Social Exchange Theory. However, there was no study on how the satisfaction in using the flexible work arrangement influences the performance rather than whether the flexible work arrangement is used itself. This study, which presented a positive relationship of influence through the quantitative analysis between the satisfaction with flexible work arrangement and performance, is determined to be capable of making contribution to the development of the flexible work arrangement related studies in Korea to date. Furthermore, in order to further expand the positive relationship between the satisfaction with flexible work arrangement and performance, it was confirmed through the validation of hypothesis of this study that the extent of organizational commitment of members is crucial. That is, an implication is offered such that the positive relationship between the satisfaction with flexible work arrangement and performance may be greater in an organization with more members who are focused on achieving organizational goals and are very willing to invest individual efforts and make sacrifices.

This study has major limitations as follows. First, performance, organizational commitment, and satisfaction with the flexible work arrangement, which are the main variables of this study, were all measured by using a single item. That is, the variables' measurement validation procedures such as by using multiple questionnaires to measure a single variable and analyzing the reliability of variable measurement and the validity of variable composition, were omitted. Consequently, it is admitted that there are some limitations regarding the validity of performance reliability for the measurement of variables. Next, the variable measurement and validation of hypothesis of the study were conducted based on the results of the responses based on the level of subjective perception of the civil servants themselves, who were the subjects of the survey. Naturally, most studies in the social sciences are conducted by utilizing the data provided in response based on the subjective perception of the survey subjects. However, if there exist any indicators which may be measured objectively and directly related to the analytical variables, and if some of them may be utilized for the statistical analysis, it is determined that they would be more helpful in validating the relationship of influence between the variables.

## 5. References

### 5.1. Journal articles

- [3] Sa Y. The State and Future Topics of Flexible Work Arrangements Research in the Public Sector. *Korean Public Personnel Administration Review*, 20(1), 67-89 (2021).
- [4] Kim T & Oh M. The Impact of Workplace Flexibility on Organizational Commitment from Employee Perspective. *Korean Journal of Public Administration*, 56(4), 189-220 (2018).
- [5] Min KR & Park SM. Probing the Impacts of Flexible Work Schedules on Organizational Outcomes: With a Focus on the Moderating Roles of Reform Values in Public Organizations. *Korean Public Administration Quarterly*, 25(4), 1211-1248 (2013).
- [6] Hwang S & Han S. The Influence of Flexible Work Arrangements on Satisfaction, Efficacy and Performance: An Empirical Analysis on the Case of the Chuncheon City Government. *The Korean Journal of Local Government Studies*, 17(2), 391-414 (2013).
- [7] Jin J & Jang E. Flexible Work Arrangements and Job Satisfaction. *Journal of Governmental Studies*, 21(2), 235-263 (2015).
- [8] Han Y & Jeong Y. The Effects of Flexible Work Arrangements on Work-family Conflict and Facilitation, and Job Satisfaction for Married Working Women: A Longitudinal Analysis. *Journal of Family Resource Management and Policy Review*, 18(4), 1-26 (2014).
- [9] Kim YW. A Study on the Factors Influencing the Participation of Public Officials in the Smart-work. *Korean Policy Science Review*, 17(3), 117-135 (2013).
- [10] Jang H & Park Y. An Exploratory Study on Revitalization of the Flexible Workplace for Public Agricultural Research Workers. *The Journal of Korean Policy Studies*, 15(2), 49-72 (2015).
- [11] Kim S & Bae M & Go S. An Analysis of the Factors Influencing the Adoption of Flexible Work Arrangements in Public Agencies. *The Journal of Regional Studies and Development*, 24(2), 187-217 (2015).
- [12] Bae K & Yang G. A Study on Successful Establishment of Flexible Work Arrangements: Focusing upon Flex-time Work, Part-time Work and Telecommuting. *Journal of Local Government Studies*, 23(4), 125-153 (2011).
- [13] Park S. Realities and Future Task of Flexible Work Schedule as a Policy Tool for Work-life Balance: Focusing on Local Government Employees. *Modern Society and Public Administration*, 24(1), 375-397 (2014).
- [14] Chang H & Choi M. An Evaluation of Family-friendly Employment Policy in the Participatory Government: Focusing on the Perception of Public Employees on the Home-based Telework and the Flexible Time Work. *Korean Public Personnel Administration Review*, 8(3), 121-154 (2009).

- [15] Bae K. A Study on the Development of Part-time Work System in Korea: Focusing upon the Review of Part-time Work System in the U.K and U.S.A. *Korean Public Personnel Administration Review*, 10(3), 259-284 (2011).
- [16] Jin J & Chang Y. A Study on Flex Working in Public Sector of Korea. *Korean Public Personnel Administration Review*, 9(3), 29-55 (2010).
- [17] Choi H & Park C. Relationship between Participant's Selection Attributes, Satisfaction, and Continued Participation according to Safety Awareness of Water Leisure Sports. *International Journal of Crisis & Safety*, 6(2), 1-8 (2021). [Article]
- [18] Jo S & Kim D. Factors of Job Satisfaction in Members Republic of Korea National Intelligence Organizations: Focusing on Police Intelligence Agency. *International Journal of Police and Policing*, 1(1), 10-19 (2016). [Article]
- [19] Shin H & Kim J. The Effects of University Taekwondo Demonstration Team's Self-management on Exercise Commitment and Perceived Performance. *International Journal of Martial Arts*, 5(2), 20-30 (2020). [Article]
- [20] Kim M & Kim E. The Effects of Internal Marketing and Career Motivation for the Protection of Dermatology Hospital Workers on Job Satisfaction and Organizational Commitment. *Protection Convergence*, 6(2), 46-60 (2021). [Article]
- [21] Sa Y. Human Capital Management Crisis for Indefinite-term Contract Workers in Local Governments: Focusing on Education & Training and Performance. *International Journal of Crisis & Safety*, 5(1), 1-12 (2020). [Article]
- [22] Baron RM & Kenny DA. The Moderator-mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic and Statistical Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182 (1986).

## 5.2. Books

- [1] Georgetown University Law Center. Workplace Flexibility (2010).

## 5.3. Additional references

- [2] <http://www.mom.go.kr/> (2021).

# 6. Appendix

## 6.1. Authors contribution

	Initial name	Contribution
Author	YS	-Set of concepts <input checked="" type="checkbox"/>
		-Design <input checked="" type="checkbox"/>
		-Getting results <input checked="" type="checkbox"/>
		-Analysis <input checked="" type="checkbox"/>
		-Make a significant contribution to collection <input checked="" type="checkbox"/>
		-Final approval of the paper <input checked="" type="checkbox"/>
		-Corresponding <input checked="" type="checkbox"/>
		-Play a decisive role in modification <input checked="" type="checkbox"/>
		-Significant contributions to concepts, designs, practices, analysis and interpretation of data <input checked="" type="checkbox"/>
		-Participants in Drafting and Revising Papers <input checked="" type="checkbox"/>
		-Someone who may explain all aspects of the paper <input checked="" type="checkbox"/>